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ORIGINAL COMMUNICATIONS.

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MULTIPLE PAPILLOMA OF THE LARYNX IN CHILDREN.*

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The presence at the same time in my clinic at the Manhattan Eye, Ear, and Throat Hospital of three cases of multiple papilloma of the larynx in children varying in age from five to ten years, affords such unusual opportunities for observation of the vagaries of this trouble that I have ventured to submit their histories, with comments, as material worthy of your consideration.

Last year Coakley presented a paper upon the same subject which elicited considerable discussion; but there seemed to exist as many divergent opinions upon treatment as existed some years ago when Dr. Hunter MacKenzie advocated so strongly tracheotomy alone as a curative measure in all cases of papilloma of the larynx in children.

Case I. F. L., male, aged seven, was first admitted to the Manhattan Eye, Ear, and Throat Hospital in 1905. At that time the patient complained of hoarseness only. There was no family history bearing upon the case. I am indebted to Dr. Duncan McPherson for the history of the case when first observed, and under whose skillful treatment the patient still remains.

The growth at first appeared single, sessile, and of mulberry shape. It was removed with the Mackenzie forceps at varying intervals, and at times was completely eradicated. About four to eight weeks generally intervened between operations, and this continued until the child came under my observation in October, 1907. There had been difficult breathing occasionally, which would be immediately overcome by removing the growth. Dr. McPherson noted the diminished rapidity of recurrence in the

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last year, and frequently a period of one to two months would now intervene between recurrences. The general health of the patient improved, and from a poorly nourished, anemic child, he developed into a sturdy boy.

A fibrosis occurred in the anterior commissure, which might occasion some loss of voice, even after the growth disappeared. However, it was the opinion of Dr. Jonathan Wright, under whose surgical care the patient had been for a part of the three years' observation, that the fibrosis would also disappear when the operative interference ceased. Dr. Wright considered the method pursued in



Case I. F. L., male, aged seven years. Drawing made after beginning operations for removal of the growth. The white area surrounding the base of the neoplasm is the fibrosis resulting probably from the frequent removal.

this case to be the ideal one when conditions favor it. The instrumentation was easy of accomplishment; the growth was single and did not interfere particularly with respiration; and there was nothing prohibitive in keeping the larynx clear until that physiological change occurred which will prevent recurrence.

Case II. A. Le R., Italian girl, aged ten, was admitted to the clinic July 11, 1907. She was brought to the hospital particularly for the removal of tonsils and adenoids, although she had been hoarse for five months previously. Owing to her struggles, it was absolutely impossible to examine her larynx in the clinic. No fam-

ily history bearing upon the case was obtainable. There were five other children in the family, all of whom were healthy and without hoarseness. No warts were found upon the body. The patient had had none of the diseases of childhood, but had lost about fifteen pounds in the previous five months.

At the time of examination there was slight cyanosis, and that anxious "facies" denoting difficult respiration. The voice was a hoarse whisper. I advised immediate admission to the hospital, and tried adrenalin sprays and steam inhalations, by which she was temporarily relieved of her distress. On July 18th she was anesthetized for



Case II. A. Le R., female, aged ten years. The drawing presents the condition following the first operations for removal of the neoplasm.

the removal of the tonsils and adenoids, at which time I obtained a view of the larynx, and removed a small papilloma for examination. The larynx had apparently three rather large growths in it, two upon the cords anteriorly, and one in the subglottic region.

Dr. Wright, in reporting upon the specimen, said that the growth was a papilloma springing from a base of granulation tissue, probably tuberculous. Examination of the lungs, however, revealed no evidence of tuberculosis, nor the sputa any bacilli.

The patient was immediately put on cod liver oil and arsenic, and seemed to respond to the treatment by gaining four pounds in two weeks. On August 1st I performed tracheotomy, believing it to be

the best thing for the patient, for three reasons: First, her breathing was difficult and she became quite cyanotic at times; second, she was absolutely intractable for operative measures *per vias naturales*; third, the presence of a tracheal tube would permit the better use of the Jackson tubes for frequent removals of the growths, if necessary.

The trachea was opened high up under chloroform anesthesia, and the immediate results were good; but the next day, and for many subsequent days, severe hemorrhages would occur from the trachea and from the wound itself. The child would work at the tube until it was out of place, and owing to the many attempts to replace it a false passage was made along the side of the trachea. This condition continued for about ten days, until finally the inflammation subsided, and the tube became less irritating. Exuberant granulations sprang up around the tracheal wound, which were removed with scissors, and the bases were then cauterized with fused silver nitrate.

On October 15th, under chloroform anesthesia, a small quantity of papillomata was removed from the larynx through the Killian tubes. The light was unsatisfactory, and the speculum was not adaptable for use in a child's larynx. On November 2d, another attempt was made by my assistant, Dr. McPherson, to remove more of the growths with the Killian tubes. He was not successful with the tube, but quite a few were removed by Mackenzie's forceps with the aid of the laryngoscope.

Following this operation, the patient was quite sick and could retain no food for several days. There was no laryngeal oedema, however. On February 13, she was again operated upon, and this time I used the Jackson self-illuminating speculum, and also his forceps. I removed a number of papilloma, and found them in many places where I had not seen them previously when using the laryngoscopic mirror. I found the Jackson tube much more satisfactory, and no untoward effects followed. The patient had continued to gain in weight, and was breathing so well that she had been permitted to make frequent visits home of one or two days' duration.

On March 27th, Dr. McPherson operated upon the patient with the Jackson speculum and removed as many growths as had been previously taken out altogether. Since this time there has been more space in the larynx and the child can speak in much clearer tones than before. There are, however, quite a number of the growths still present, and they do not yield to arsenic and potas-

sium iodide internally, nor to alcohol, zinc chloride, adrenalin and silver nitrate locally. I am now injecting castor oil into her larynx daily.

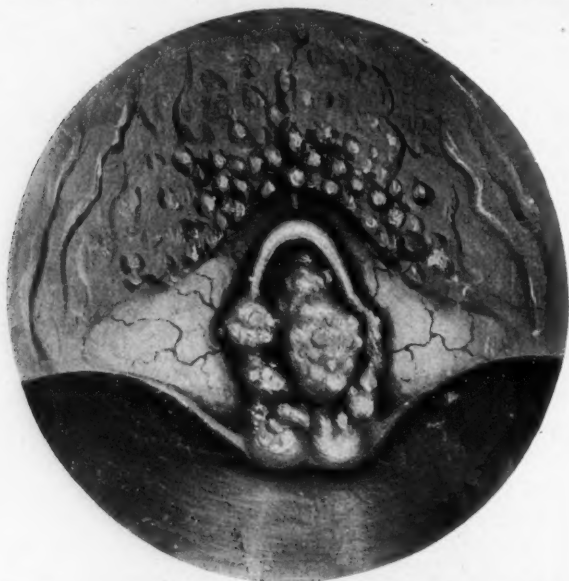
Case III. J. M., of German parentage, male, aged five years; admitted to the Throat Clinic of the Manhattan Eye, Ear and Throat Hospital, October 26, 1907. The mother gave a history for the child of snoring and mouth breathing, and at the time of admission my attention was directed only to the presence of adenoids and tonsils. Nothing was said at this time to make me suspect laryngeal growths. Upon subsequent investigation I ob-



Case III. J. M., male, aged five years. The drawing shows the appearance of the larynx before any radical interference had taken place. Only a few papillomata had been removed when this drawing was made.

tained the following facts from the father: When the child was two years old he had sore throat with fever, and after three days' sickness had a sudden attack of dyspnoea and became slightly cyanotic. A physician was called in, who administered some medicine which relieved the condition for a time, but the hoarseness continued. After several months of hoarseness the father took the child to the Post-Graduate Hospital, where some growths were removed from the throat, resulting in no apparent relief, although the child remained in the hospital for one week. The father took the child home, where for about six months he remained with no discomfort other than hoarseness. However,

about one year ago the child began to breathe badly and would choke at night. The father said that frequently the boy would rise in bed, stretch out his hands, and apparently plead for air. He then took the child to Bellevue Hospital, where the doctor removed some growths from the larynx, and after two weeks a second removal occurred. These two operations overcame the choking condition, and he was brought to the Manhattan Eye, Ear and Throat Hospital seven months ago for the snoring and sore throat



Case III. As it appeared May 1, 1908, after frequent removals of all visible papillomata.

only. No family history had any bearing upon the case. There were three other children in the family with normal voices and in good health.

Upon admission the child was fairly well nourished and the breathing was not bad except upon excitement. I removed his tonsils and adenoids on October 29th, after admission to the hospital, and not until he protested rather vigorously against the anesthetic did I notice anything unusual in the voice. He took his anesthetic badly, but before removing his tonsils and adenoids I examined his larynx and found it almost completely blocked with papillomata. I removed some of these growths at this time, to give him better

breathing space, and after the operation he was placed under a tent. With the exception of bad breathing and delayed recovery from the anesthetic, nothing eventful resulted from the operation. The breathing and hoarseness became worse after the operation, and continued to increase until November 16th, when I performed a tracheotomy. This overcame the difficult respiration. The patient made a good recovery from the operation, and on January 25th I removed a large quantity of papillomata from the larynx with the Jackson speculum and forceps. Chloroform anesthesia was employed. Temporary relief was obtained only, for new growths had sprung up in different areas, completely filling the larynx and even encroaching upon the epiglottis. On February 18th, pursuing the same methods as before, I again removed at least a half drachm of these warts. On March 3rd, I again performed the same operation and removed more growths than ever previously. The larynx is now filled up again with a greater number and larger growths than ever—one is about the size of a raspberry. I have applied locally alcohol, zinc chloride and silver nitrate, and now I am injecting pure castor oil into the larynx once a day in hopes that the same results may obtain in the larynx as upon the skin.

The microscopical reports on all these growths have been simply papilloma. The patient has steadily gained in weight. In this case tracheotomy was imperative, as no amount of operative interference would have kept down the growths.

ETIOLOGY.

Apparently nothing is determinable as to the cause of these growths in children, for they may occur at birth or at any time during life. Morell Mackenzie performed a tracheotomy upon a child aged two years and four months, in which the larynx was found, upon autopsy, to be filled with papillomata. The history of a hoarse, suppressed cry at birth, and a continued loss of voice led him to conclude that it was unquestionably a case of congenital papilloma. All congenital tumors of the larynx have been found to be papillomatous (Morell Mackenzie, *Laryngeal Growths*, 1871).

The appearance of a papilloma at birth precludes in a measure the probability of voice strain as a cause. The history of a number of these cases shows that hereditary tendencies, lowered vitality and unsanitary conditions seem to play no important part in their formation. In some instances, however, hereditary syphilis is a possible cause, and frequently the growths will disappear under the administration of potassium iodide.

The same contagiousness that characterizes the skin wart may properly apply to the laryngeal variety, if we accept as evidence the presence of new formations in different parts of the larynx following operative measures, which areas were previously free from the growths. Papilloma of the larynx may be either pedunculated or sessile, single or multiple, and may present any size from that of a millet seed to that of a raspberry. Some authors assert that upon minute observation all of these tumors are pedunculated (Knight, *Disease of the Nose and Throat*).

Another point of resemblance between the skin wart and the laryngeal variety is the uncertainty or vagary of disappearance. Frequently a skin wart will disappear without any recognized cause, and the same may be said of the laryngeal variety. It is this inexplicable change which has led some observers to conclude that, irrespective of treatment, the growths will not disappear until that physiological change has occurred in the subject which will retard the activity of the cell organism (J. Payson Clark, *Papillomata of the Larynx in Children*, *Boston Medical and Surgical Journal*, September 28, 1905).

Morell Mackenzie calls attention to the presence of skin warts as originating probably from the irritation of dirt, as he had observed these growths in cooks, coachmen and artisans. As giving additional weight to this argument, I would add the observation of Jonathan Wright in regard to the greater frequency of warts upon country children's hands, particularly those who were permitted to keep them dirty—to which observation I can readily accede. Another point is that of location of the skin wart, which is usually at the knuckle or between the fingers, where the papillae of the skin would be most irritated by the dirt being rubbed in. Irritation of the mucous surfaces, however, would have to result more from friction against another mucous surface or from the rubbing in of the mucus itself. Local predisposition seems to be the only etiological factor, however, that can be definitely cited. Of course there are those cases of papilloma of the larynx in adults due to the inspiration of irritating vapors and particles of dust, but this condition is unlikely to occur with children.

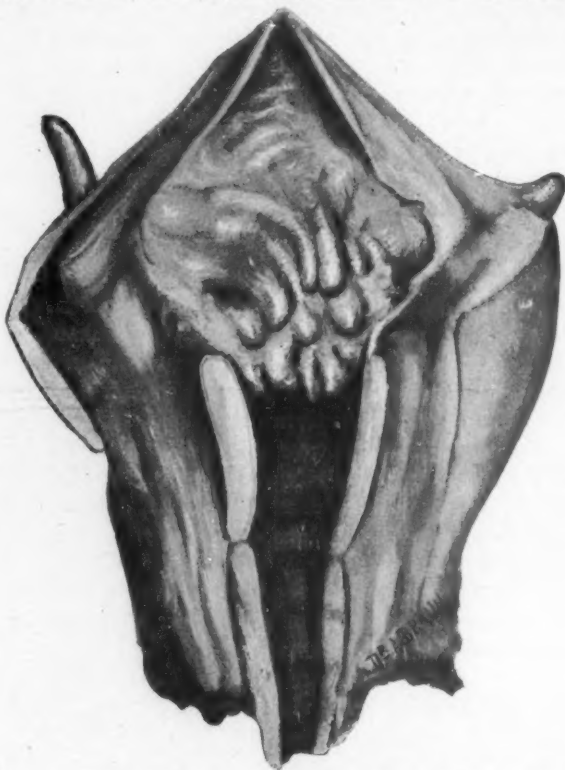
LOCATION.

Thick growths appear more frequently upon the cords than upon the ventricular bands, and more frequently in the anterior than in the posterior part of the larynx. They rarely occur in the posterior commissure, except the so-called tuberculous papillomata.

However, in Case III they spring from all parts of the larynx, and even upon the under surface of the epiglottis and the aryepiglottic folds.

SYMPTOMS.

The symptoms are somewhat characteristic, though they might easily be simulated in retropharyngeal abscess—abscess at the base



Case IV. The larynx of an infant who died of asphyxia at the age of seven months. The case was probably one of congenital papilloma, and the history and appearance of the growth bear a striking similarity to Case III. The drawing is a reproduction from the Archives of Paediatrics, Nov., 1904, in which journal the case was reported by Theodore J. Etterich.

of the tongue—laryngeal diphtheria, or in laryngeal stenosis from any other cause. Croup simulates papilloma of the larynx very strongly, and the converse of this is also true, and no doubt many cases of papilloma have been diagnosticated as croup.

Hoarseness, or possible loss of voice, dyspnoea, cyanosis, and the peculiar facial expression of anxiety accompanying any disturbance of respiration are the significant symptoms present. In Case III no suspicion of papillomata existed when the child was examined for adenoids, and it was only when he objected to the anesthetic that my attention was called to the peculiarity of his voice, which led me to examine his larynx under anesthesia before removing the tonsils and adenoids. Papillomata may be present in a great many cases where the hoarseness has been attributed to adenoids, and the possibility of this error should induce us to make laryngeal examination in every case where hoarseness is present. The parent of Case III, who is a German, offered no suggestions as to the previous history of the case, and the many experiences related were all obtained after tracheotomy was performed.

FREQUENCY.

Although this neoplasm is regarded as existing more frequently than any other laryngeal growth, yet the statistics of large clinics show that it is of relatively rare occurrence in children. In the clinic of Dr. Chappell, with which I was associated for ten years, at the Manhattan Eye, Ear and Throat Hospital, there was but one case of papillomata of the larynx in a child. In another clinic in the same institution there were only two cases during the same period. Clarke reports only twelve cases in the Massachusetts General Hospital in the examination of twelve thousand six hundred and twenty-three children under fourteen years of age. (*Boston Medical and Surgical Journal*, September 28, 1905). In eleven hundred tumors of the larynx reported by V. Bruns, six hundred and two were papillomata, but of this number the author does not state how many existed in children.

In 300 tumors of the larynx reported by Fauvel, 206 were papillomata; of this number, only nine were in children under fifteen years old (*Traite pratique des maladies du larynx*).

In 200 tumors of the larynx reported by Massei, ninety-four were papillomata (*Sui Neoplasma laryngei, studii e casuistica*, Napoli, 1885).

In 100 tumors of the larynx reported by Morell Mackenzie, sixty-seven were papillomata, and of this number only eight were in children.

In 310 cases of laryngeal tumor reported by Schwartz, 163 were papillomata, but of these the author does not state the number occurring in children (*Des Tumeurs du larynx*).

VARIETY.

To the eye of the examiner, many different kinds of papillomata are noted. The most frequent is pale, granular, apparently friable, and with but feeble attachment to the cord or ventricular band. This variety more nearly resembles the skin wart than any of the others.

A second kind has about the same shape and size as the first, but appears more vascular, and varies from a *polypoid* condition to a pinkish *mucus soaked* appearance, which would indicate a more rapidly growing and a better nourished neoplasm.

A third is where the growth appears sessile, or where there is a large base from which spring other projections of the same neoplasm. These assume more of the cauliflower appearance. Such a growth in an adult larynx would occasion doubt in making a diagnosis.

All these macroscopic varieties, however, appear to be of the same structure when examined microscopically. The only variation to this statement in my three cases is in the report of Case II., upon the examination of some of the papillomata removed at the first operation. Dr. Wright adds that the growth sprang from a basis of granulation tissue, probably tuberculous, and in the last report says: "This seems to be a simple papilloma, but near the periphery of the epithelial papillae there are numerous cells containing degenerated hyaline matter, and at one place a distinct and typical whorl or epithelial pearl may be seen." The consistency is variable, being that of a polyp in some instances, and in others being horny and friable, even necrotic when of a tuberculous or of a syphilitic nature.

PATHOLOGY.

"The growth may be occasioned either by an hypertrophy of the normal papillae, or may be entirely new formations in the part. The basis substance is formed of connective tissue. The free surface is covered by epithelium, which may vary in its thickness and in the number of its layers, according to the seat of the tumor. Blood vessels and even nerves enter into the interior of the papillae." (Paget, *Lectures on Surgical Pathology*, 3rd edition.)

TREATMENT.

Each case has to be treated according to the peculiarity of the symptoms present, and from the literature upon the subject one is forced to conclude that there are many cases apparently similar which will not yield to the same line of treatment.

I believe that treatment can well be considered under three heads: First, that of necessity; second, that of expediency; third, that of election.

First. Under the first head will come those cases brought under observation—slightly cyanotic and with marked dyspnoea; where the child is emaciated, narrow chested, and with the characteristic "facies," denoting insufficient respiration. The child will show little disposition to cry, because the exertion lessens still more the inspired air. In such a case there is nothing justifiable but immediate tracheotomy. To attempt anesthetization with a view to using the laryngoscopical tubes would be unwarrantable, and without an anesthetic no child would stand the use of the Killian or the Jackson tubes. Likewise, under these circumstances, the time necessary to accustom the patient to laryngeal examination and manipulation is not permitted the operator, and the only expedient is tracheotomy. I do not believe that any further operative measure is justifiable at this time, for the patient's resistance is already lowered to the minimum, and prolonged anesthesia or laryngeal manipulation but adds another factor in diminishing this resistance.

Since the advent of the Killian and the Jackson tubes, particularly the self illuminating laryngeal speculum of Jackson, which enables the operator to remove all the laryngeal neoplasms directly and without endangering the laryngeal structure, thyreotomy with its subsequent possibilities is absolutely unjustifiable in children. Even though we consider as favorable the results in a number of cases where thyreotomy has been performed—there having been no recurrence during the period of observation—yet there are so many instances where it has failed utterly or where it has resulted in a complete loss of phonation that one is compelled to look upon it with disfavor in the case of children, especially now since entirely safe measures are possible through the use of the Jackson laryngoscopical tube for the continued removal of these growths until nature has brought about the change that will result in their disappearance.

Taken as a whole, successful thyreotomies are materially in excess of unsuccessful ones, according to the reports in literature, but we have a number of particularly unsuccessful cases reported where thyreotomy has failed. Abbe reports a case in which thyreotomy was performed four times, with continued recurrence of the growth, although the bases of the structures were cauterized. Tracheotomy had to be done finally, and the tube remained in for six years, when the growths disappeared; but the voice was lost—which condition

was most assuredly due to the frequent thyreotomies. (*Medical Record*, April 28, 1900.)

Walker Downie reports a case in which thyreotomy was performed six times in one year in a child two years old. Lindon reports another remarkable case in which thyreotomy was performed seventeen times in two years, resulting finally in laryngeal stenosis and necessitating the permanent use of a tracheal tube. (The Treatment of Laryngeal Growths in Children, by C. Hunter Mackenzie, *British Medical Journal*, September 28, 1901.)

Following are a number of recorded cases of unsuccessful thyreotomies, performed by various operators in different countries:

Cases.

- Massei 1 (*Internationales Centralblatt f. Laryngologie*, Jahrgang x, p. 362).
 Garel 2 (*Annales des maladies de l'oreille et du larynx*, Juni, 1891).
 Oertel 2 (*Sammlung Klinischer Vortraege*, No. 315, p. 2807).
 Railton 2 (*British Medical Journal*, February 19, 1898).
 Eliasburg 1 (*Journal of Laryngology*, v., p. 245).
 White 1 (*Journal of Laryngology*, vi., p. 486).
 Cowgill 1 (*Medical News*, October 4, 1890).
 Chappell 1 (*Journal of Laryngology*, ix., p. 555.)

Summers reports a case of a child two years old with dyspnoea and hoarseness in whom low tracheotomy was performed and then thyreotomy. Upon attempting to remove the tracheal tube the child would choke. O'Dwyers' tube was tried unsuccessfully. Then a second thyreotomy was performed to no purpose, and finally the tracheal tube was left in place for two years, with satisfactory results. He also mentions two other cases in which the tracheal tube was successfully used.

Professor B. V. Bruns, of Tübingen, (*Handbuch der praktischen Chirurgie*, 1902), collected statistics of 127 children with laryngeal papilloma; forty-eight were not operated upon, and of these thirty-two died—twenty-eight by suffocation; three were cured spontaneously; twenty-six were tracheotomized—seven dying after the operation; twenty-one were subjected to laryngotomy—eight of these were permanently cured; forty were treated by intralaryngeal methods, of whom thirteen were permanently cured.

Rosenberg's Statistics:—109 children were subjected to laryngotomy, the operation being performed 144 times; eleven children were operated upon twice; three children were operated upon three

times; one child was operated upon four times. In all fifty-two children were not over four years old; twenty died mostly from suffocation due to recurrence of the papillomata; recurrences took place in forty-three after repeated operations; forty (or thirty-six per cent) of these were cured; ten of these had more or less loss of voice; eighty-eight children were treated by intralaryngeal methods; thirteen were not over four years old; three died, one from suffocation due to recurrence. Forty (forty-five per cent) were cured, but sixteen of these were of too recent date to determine the final outcome.

Thyreotomy may occasion loss of voice and stenosis of the larynx. It may be unsuccessful in eradicating the growth and require frequent repetitions of the operation without ultimate success, and finally necessitate employment of other measures to effect a cure. It may also be classed under the head of dangerous to life, as shock, producing death, frequently follows operative interference in the larynx. In view of the fact that it only enables the operator to remove successfully all growths from the larynx at the time, with no definite assurance of their nonrecurrence, and as this may be almost as successfully accomplished with a Jackson tube, without endangering the laryngeal structures, I believe that thyreotomy is unjustifiable.

Second. Under the head of expedient treatment would come that of tracheotomy. When is it justifiable? Should it be performed in every case of laryngeal papilloma? If all observers and operators had had the pleasing experience of Hunter Mackenzie there would be no argument against tracheotomy in every instance, but for some reason there have been those who have not met with the same favorable experience, though these cases have occurred in the hands of men equally skilled and equally desirous of favorable results. A marked example of the ineffectiveness of tracheotomy is the case reported by Dundas Grant, in which a tube had been worn for twenty-two years with no disappearance of the growth. (*International Medical Annual*, 1904.) Sympson reports a case of recurring papilloma in a child aged seven, in which a tracheotomy tube was kept in place for one year and three months, with no improvement, when thyreotomy was performed, with a recovery. (*British Medical Journal*, November 9, 1901.)

The consensus of opinion justifies tracheotomy in those cases of multiple papillomata of the larynx where there is difficult respiration or impaired health apparently due to bad breathing. Also in

cases where there is no evidence that the patient will become tractable in the use of intralaryngeal methods, likewise in cases of rapid recurrence after removal. The presence of the tracheal tubes in cases of multiple papillomata is a source of great assurance to the operator, whether the removal be by the old laryngeal method or with the Jackson tube, for even slight operative measures in the larynx may result in unexpected oedema. The tube is a safeguard against suffocation, but its long continued use may also result either in stenosis of the trachea or a collapse of the rings due to long continued disuse. The stenosis may be overcome by dilatation, but the collapse is of a more serious nature. This unfortunate occurrence may be obviated in a measure by frequent removal of the tracheotomy tube or by substituting a soft rubber tube for the metal one. I have endeavored to use a very short tube—one that would just engage the tracheal wall—but every fit of coughing disengages the tube, which renders it impracticable. The wearing of the tube probably hastens that physiological change in the mucosa necessary to the disappearance of the warts by reducing the vocal activity, and thereby reducing the blood supply to the area. But in view of the instances cited, where tracheal tubes have been worn for a long period without eradicating the growth it is unreasonable to conclude that the mere presence of the tube without some collateral aid would result in the disappearance of the growth. Where the papilloma is single, and in no way endangers the respiration, I would deem it inadvisable to do a tracheotomy.

Third. Election. Treatment under this head would involve no surgical procedure other than that which might be accomplished through the *vias naturales*. In a limited number of cases papilloma may be removed from the larynx of children after the use of cocaine only with Mackenzie's forceps, the snare or the currettes of Krause, Heryng, Landgraf, and Schroetter. In Case I the child has been trained to hold a perfectly immovable larynx, and no difficulty is experienced in removing the growth with any of the instruments mentioned, though the position of the tumor renders the Mackenzie cutting forceps the most effective. I have attempted snaring the growth, but have always failed, owing to the loop slipping off. In order to use the Jackson self-illuminating speculum, it is necessary to anesthetize the patient, which in itself adds an element of danger; but if the patient will not permit of intralaryngeal examination it becomes imperative to anesthetize, in order to facilitate the employment of the Jackson tubes.

Chloroform anesthesia, rather than ether, is preferable in these cases, because it lessens the laryngeal secretions by being less irritating to the mucosa. After partial anesthesia by chloroform, it is well to apply a 10 per cent solution of cocaine to the interior of the larynx, and also a one-thousandth solution of adrenalin, which renders the larynx less sensitive to manipulation and obviates the necessity of deeper general anesthesia.

By the time the patient is under the anesthetic the cocaine has overcome the laryngeal reflexes, which has to be accomplished before the introduction of the speculum. The patient is then placed in the Rose position, with the head well over the table, and supported with the left hand of the assistant, who sits to the right of the patient with his knee under the head and his foot on a stool. With his right arm extended under the neck of the patient, he introduces his index finger, protected with a large iron thimble, between the jaws and opens them sufficiently to admit the speculum. The larynx, trachea, and mouth should be brought into as direct a line as possible. The operator kneels upon a low stool at the head of the patient and introduces the speculum between the tongue and hard palate and presses upward and forward until the epiglottis is seen, when he engages this upon the tip of the speculum, elevating the tip and depressing the handle, until the laryngeal structures come into view. Gentle manipulation is necessary to present the structures in anything like their normal appearance, as too much pressure will pull the ventricular bands together and occlude the view of the structures beneath.

In my two cases it has not been difficult, after a little experience, to see the growth plainly in the larynx. I have used the Jackson forceps with complete satisfaction in removing the warts. It is by no means as easy of accomplishment as it appears to the onlooker, and the instrument frequently interferes with the illumination of the growth. It is quite possible to mistake the tips of the arytenoids for a papilloma when the parts are covered with blood, and I deem it one of the essentials of the operation to keep the parts well sponged and as bleached as possible. Adrenalin acts fairly well as an astringent at first, but I have found a weak solution of zinc chloride, or a solution of tannic and gallic acid controls the hemorrhage for a longer period. I do not consider it wise to keep the patient anesthetized too long, and would advise frequent removals rather than prolong the anesthesia. There never has been any oedema following these operations in my cases.

After the operation the patient is kept under a tent for twenty-four hours, and the air is moistened by the steam from a croup kettle. Ordinarily I use a mixture of *Ol. Pinus pumilionis*, one drachm; menthol, 10 grains; and milk of magnesia, 2 ounces. Of this mixture, one teaspoonful to a pint of water is sufficient. This mixture gives off a steam laden with a nonirritating medication which is very acceptable to the patient.

LOCAL TREATMENT.

Nearly every conceivable astringent has been applied locally to these growths. Quite a few observers have seen beneficial results from alcohol applied in full strength. Delavan has particularly recommended this in the papilloma of adults. I have applied it consistently in two of my cases, but with no apparent improvement. *Thuja occidentalis* has been used by quite a number, most frequently in adults. Brown, of Chicago, used *Thuja* in an adult with apparently good results. (*Journal of the American Medical Association*, August 3, 1901.) Zinc chloride, silver nitrate, adrenalin, lactic acid, and many other astringents have been applied locally for the removal of these growths, with but little apparent result.

INTERNALLY.

Arsenic has had more advocates than any other internal drug, and no doubt arsenic hastens that physiological change necessary to the disappearance of the warts. I have had Cases II and III on Fowler's solution since their admission to the hospital, and they have both gained in weight; but I am skeptical as to the effect upon the larynx. I have also had these cases on potassium iodide for a limited time, but with no apparent effect. Bostock is a very strong advocate of potassium iodide and arsenic internally, alternating between the two (*Monatsschrift f. Ohrenheilkunde*, 1905, Part II.)

I believe that any internal medication which will build up the general system will aid in hastening the departure of these growths, and likewise the local application of any astringent will retard the growth of the wart by diminishing the blood supply.

As castor oil applied frequently to a skin wart will often result in its disappearance, I thought it might act as well in the larynx. To this end I have injected into the larynx daily a few drops of castor oil. Time for positive conclusions in regard to its efficiency has not yet elapsed. Castor oil is certainly not irritating and can result in nothing unfavorable.

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LIMITATION OF OTO-LARYNGOLOGIC PRACTICE.*

BY JOSEPH C. BECK, M. D., CHICAGO.

A few years ago one could have answered this question very easily by enumerating the various conditions commonly treated within the nose, pharynx, larynx and ear, but in recent years, particularly since the Schwartz operation instead of the Wilde incision, the radical mastoid for the cure of chronic suppuration of the middle ear, external operations on the accessory nasal sinus and on the larynx have been performed by oto-laryngologists, this special field has gone beyond these confines. Slowly but certainly have they advanced, and to-day modern oto-laryngology comprises the capital operations of the head and neck.

There still exists considerable hesitation in our ranks as to this progress and extension, feeling the possible danger of encroachment on the field belonging to the general surgeon. This, however, I believe to be a mistake, because there is a natural association between the affections of the cavities of the nose, throat and ear and their adnexa. Consequently the modern oto-laryngologist should not be satisfied to confine himself to the treatment of the cavities, but also the adnexa and the complications.

On the other hand, the limitation of oto-laryngologic practice is entirely an individual matter; one may confine himself to the treatment of the nose and throat, while another will treat only the ear, another will treat them all, another only conditions within the cavities, and some will treat internal as well as external diseases of these structures, nay, go beyond and treat the structures intimately associated with them. I wish to commend the latter class, and herewith give reasons by citing some specific conditions.

First. Let us take a case of nasal obstruction in which a diagnosis of fibrosarcoma is made. It involves the entire half of the superior maxilla, and it is necessary to do a temporary or permanent resection of the superior maxilla with or without ligation of the carotid artery. It has been the practice to call in a general surgeon to do this operation, which I claim is entirely within the domain of oto-laryngologic practice.

Second. An acute or chronic accessory sinus affection develops definite brain symptoms; a diagnosis of brain abscess

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or meningitis is made as a complication. The rhinologist has performed the intra- and extra-nasal operation on the sinuses, but the exploration of the brain or puncture of the spinal canal has been left to the general surgeon to do. There is no reason why the complete operation should not be performed by the oto-rhino-laryngologist.

Third. The many varieties of external nasal deformities have been and many are still being performed by general surgeons, notwithstanding the fact that in most cases intranasal surgery is required also in order to obtain the very best results. It is, therefore, clear that these cases belong to the care of an oto-rhino-laryngologist.

Fourth. The lips, gums, jaws, palate, salivary glands and ducts, cheeks and tongue, are being treated in a miscellaneous manner, some by the general surgeon, some by dentists, oral surgeons or stomatologists, and some by the rhino-laryngologists. The proper diagnosis and treatment are so important in relation to the special functions of breathing, speaking, hearing, smelling and tasting, that for those reasons if for no other should the above structures be treated by the oto-rhino-laryngologists.

I wish now to mention some specific pathological conditions of these structures:

(a) Of the lips; harelip, congenital staphyloma, neoplasms, inflammatory diseases, and angioneurotic edema.

(b) Of the gums and jaws; epulis and other neoplasms, paradental and dentigerous cysts, fractures and dislocations, periostitis, abscess and necrosis.

(c) Of the palate; cleft palate and other congenital defects, paralysis, neoplasms, and inflammatory diseases.

(d) Of the salivary apparatus; salivary calculi and cysts or ranulae, inflammation, abscess and neoplasms of the gland proper.

(e) Of the cheeks; leukoplakia, neoplasms and inflammatory diseases.

(f) Of the tongue; black tongue and other keratoses, tubercular and syphilitic diseases and other inflammatory affections, congenital shortening or absence of the frenum, otherwise known as tongue-tie, neoplasms.

Fifth. In recent years it has been clearly shown, especially by Groeber, Moos, Wood, and others, that the lymphatic structures of the mouth, nose, nasopharynx, pharynx and larynx drain into the various glandular regions of the neck, and their enlargement

or infection is in direct proportion to the infection of these lymphoid structures within the cavities. Conversely, with the clearing up of the primary infection will the glandular disease disappear. It, therefore, becomes clear that enlarged lymph glands, no matter from what source, that drain the above mentioned lymph structures come within the scope of the management of the oto-rhino-laryngologist. It is not at all rare to find cases of glands of the neck that have been enlarged for some time, if they have not as yet suppurated, disappear as soon as the tonsils or adenoids are removed. It is also not rare to find recurrence of the enlarged glands of the neck after they have been removed, sometimes two or three times, until the tonsils or other infected structures within the cavities have been removed.

Sixth. A very frequent complaint of difficulty of swallowing and breathing, as well as other sensations referable to the throat, is due to the enlarged thyroid gland. Pressure on the recurrent laryngeal nerve will produce paresis or paralysis of the vocal cords, which, though more infrequent, does occur due to the same cause. This pathological condition is rationally within the limits of our specialty and should be performed more frequently by us than it is.

The same may be said of any tumor of the neck, as also branchial cysts when they produce symptoms referable to the nose, throat or ear.

Seventh. The various external operations on the larynx have practically all been performed by laryngologists in the past ten years. All I wish to say in this regard is, that this goes to show their ability to perform these most difficult capital operations.

Eighth. The trachea, bronchi, lungs, oesophagus and stomach, especially insofar as examination and treatment by means of the various scopes (tubes) are concerned, are certainly within the limits of our specialty and open a great field for advanced work.

Ninth. The many operations on the external ear, as plastics and removal of neoplasms, have for some time been performed by otologists with excellent results.

Tenth. The manifold complications of a mastoid infection, such as sinus thrombosis, thrombo-phlebitis, brain abscess, abscess of neck secondary to Bezold's variety of mastoiditis, and meningitis, have likewise been mastered by the oto-laryngologist and have raised our standard considerably.

Eleventh. The neuroplastic operation for the cure of facial paralysis has in the majority of instances been performed by general surgeons, notwithstanding the fact that the majority of cases are either associated with severe lesions of the temporal bone, or due to our effort to cure suppurative ears. Speaking from personal experience, I wish to urge every otologist when he finds himself confronted by this unfortunate and most unhappy condition, to do this delicate, difficult, but interesting surgical procedure.

I have now mentioned mostly surgical affections, because to go into the subject any further would take up too much time; besides, it will be understood that other local or general measures will be employed as necessary.

Now, gentlemen, that I have enumerated the most important conditions that modern oto-rhino-laryngologists must be prepared to treat, I wish to give my reasons why they have the advantage by so doing.

First. From the nature of the fact of constantly being trained to manipulate delicate structures, it is natural that their results are better.

Second. In many of the mentioned operations, as the cleft palate, mouth, etc., reflected light by means of the mirror is necessary, and only those constantly trained to handle the mirror can do the best work.

Third. By confining his work to the surgery of the head and neck, especially to this limited field, he naturally becomes an expert, whereas those that have the entire body to take care of will most likely not have the opportunity to observe as many cases. Of course, this will be qualified by the number of cases any one sees.

Fourth. As said in the beginning, the oto-laryngologists should treat not only the primary lesions, but also the adnexa and complications. All they have to do is to get perfected in the technic and know well the surgical principles, because the anatomy, physiology, and pathology have always been well known to them.

I have said nothing in regard to the oto-rhino-laryngologist and ophthalmologist or the diseases that will be found in both departments, because the President has already alluded to it. I would, however, like to say that no oto-rhino-laryngologist can scarcely do without the co-operation of an ophthalmologist, and vice versa.

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SOME REMARKS ON AURAL SURGERY.*

BY DON M. CAMPBELL, M. D., L. R. C. S. EDIN., DETROIT, MICH.

Within the memory of every one of us there has been a great change in the sentiment held by the Mind Professional towards otologic surgery.

Fifteen years ago one of my dearest professional friends, when he arose in a local medical society to discuss a paper on an otologic subject, which I had had the temerity to present, complimented me on my bravery in essaying a subject dealing with the ear, and perforced his remarks with the sentiment, "Fools rush in where angels fear to tread."

Entirely different to-day is the reception given an effort of that nature because the profession has been more or less perfectly educated along the lines of the vastly important role played by diseases of this organ, as well as by the fact backed up by incontrovertible clinical proof that great and important progress has been made in the surgical management of these cases.

Inasmuch as prophylaxis, preventive medicine or surgery is rightly the brightest jewel in the profession's diadem, it is a matter of congratulation that we working in this corner of the professional vineyard should have it in our power to add our little sparkler to the general display.

A broad view of the etiology of aural diseases, acute, chronic, catarrhal or septic, brings home to one the fact that in the larger number of aural diseases which have their clinical manifestations in the Eustachian tube, tympanic cavity and mastoid cells, the etiologic factor is to be found in the upper air tracts and notably in the naso-pharyngeal space.

This statement will, I judge, be readily accepted as applying to acute catarrhal manifestations in the Eustachian tube and middle ear, to acute suppuration of the middle ear and mastoid and also as a logical consequence of the latter to chronic suppuration of the middle ear and mastoid.

It is true that this last covers a very interesting category of aural diseases; but what of that bete noir of otology, chronic

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catarrhal otitis media,—progressive sclerosis,—that class of patients which you and you, and I and you again, have tried in vain to relieve; the class that go through life with their hands behind their ears, sour expressions on their faces and suspicion against all mankind deeply implanted in their hearts?

Now what can be done for an individual with tympanic sclerosis well established?—almost nothing at all.

When however one ponders upon the sequence of events which has led up to this undesirable state of affairs and follows back one after another the succession of pathologic occurrences one in most cases arrives at the conclusion that these individuals who come as adults to our consulting rooms to torment us with their story of impaired hearing and nerve racking tinnitus which we are in so many cases unable to relieve started as children, not with sclerosis of the intra-tympanic structures but with various obstructive lesions of the upper air tract, and of these the most frequent and noticeable is:

ADENOIDS.

It has come to be my firm belief that naso-pharyngeal adenoid hypertrophy in early childhood is the chief cause of chronic catarrhal otitis media with tympanic sclerosis in the adult, and these two diseases are not to be looked upon as entities but as the two extremes, the beginning and the end, of one and the same pathologic process.

Furthermore in the courage of one's conviction in this direction lies firstly the hope of relief of intra-tympanic sclerosis and secondly the opportunity of practicing a truly preventive and conservative surgical procedure.

In this connection I wish to quote three clinical histories very briefly. (*Case 1*).—Mrs. E., aged 39, a native of Canada, consulted me for relief of a deafness and tinnitus which had existed for four or five years. Examination of the nasal and naso-pharyngeal chambers revealed a large polypus hanging from the vault of the pharynx and obstructing both Eustachian tubes and also both posterior nares.

The clinical history of this case revealed the fact that the obstruction to breathing and the aural complication had not been present before about the age of 33 years but that the difficulty had been extreme for the last five or six years.

An examination of the ear showed a typical picture of chronic catarrhal otitis media and tuning forks tests located the difficulty in the tympanic cavity.

This patient made a complete recovery after a thorough surgical cleaning out of the naso-pharyngeal cavity.

The tinnitus completely disappeared and the hearing became normal. I quote this case to show that even after six years of an obstructive lesion in the conducting apparatus recovery is possible.

Case 2.—Miss K., age 20. This patient has been deaf for ten years and has had an annoying tinnitus—diagnosis, chronic catarrhal otitis media with adenoid vegetation in the naso-pharynx; otoscopic examination shows far advanced sclerotic changes in the tympanic cavity.

Under gas anesthesia the naso-pharynx was thoroughly curetted with a Cottstein curette and the remains of the adenoid mass then removed by a Brandigee adenoid forceps.

The unpleasant symptoms in the ear were modified but the hearing only slightly improved even by a continuous course of local treatment by sprays, inflations, and massage preceding and following the adenoid operation.

Case 3.—Miss S., age 27 years. This patient has been the subject of intolerable tinnitus for seven or eight years and has a history clearly pointing to early obstructive lesions in the upper air tract. Her hearing is moderately reduced. Diagnosis—Chronic catarrhal otitis media; adenoid vegetation in the naso-pharynx.

Treatment: Thorough removal of the naso-pharyngeal adenoids by means of the Cottstein curette and Brandigee forceps under gas anesthesia followed by thorough treatment of the naso-pharyngeal catarrh by sprays and tubo-tympanic conditions by inflations and massage, pneumatic and vibratory.

After eight months of observation this girl's hearing has improved fourfold but the tinnitus remains unmodified and it is as annoying as ever.

It seems to me that these three brief histories tell us some things of importance. Case 1 which was strictly speaking not an adenoid case at all, shows us that we may have an obstructive lesion of at least six years' duration which is capable of cure if the proper surgical remedies be employed.

Cases 2 and 3 are typical examples of the incurable ravages of adenoids beginning in early childhood and making their baneful influence felt all through adult life. Why do these cases not now become normal? Because as the result of these many years of disturbed function organic changes have taken place in the intra-tympanic structures which are incapable of resolution.

On the other hand had these obstructive lesions been relieved in early childhood—say even as in case 1 within six years of the beginning or before the tenth year of life—one cannot but believe that the history would have been a very different one and these two people would have escaped the annoyance of tinnitus and the humiliation of deafness, a truly commendable example of preventive surgery.

Another lesson is taught perhaps by these cases, viz.: That adenoids disappear at puberty is a fallacy in many instances. An astonishingly large number of adults have their naso-pharyngeal spaces decorated by adenoid mural hangings.

Let us free all children of adenoids and we will prevent many cases of adult intra-tympanic sclerosis.

It is unquestionably when one turns to a contemplation of the wonderful progress made in the surgical technique of the middle ear, mastoid process and intracranial cavity that one is most richly rewarded.

There is much of course that could be written of the surgery of this region that would be trite and uninteresting to men occupying the van of progress in this direction. I will therefore say but little of early paracentesis, or rather incision of the tympanic membrane, in acute suppurative otitis media or of early opening and complete evacuation of the cellular spaces of the mastoid in sepsis of that process, nor yet is it necessary to say much of the advisability of, and brilliant result from radical operation in chronic suppuration of the middle ear and mastoid process.

We have all had experience along these lines which have driven home to us the convictions that great good work can be and is being done in these surgical endeavors.

Nevertheless there are a few aspects of this work to which I think that I can profitably call your attention—thus one of the disadvantages of the classical mastoid operation is the length of time required for the healing process to become complete and also

the amount of pain and discomfort from which patients suffer in the after treatment of the wound, treated entirely as an open wound and allowed to heal by granulation.

BLOOD CLOT DRESSING.

Much time can in many cases be saved to the patient and his suffering much reduced by employing the so-called blood clot dressing after the method of Scheyer in general surgery. The technique of securing such a dressing is very simple and in many cases the results are startlingly brilliant as well as very acceptable to the patient.

After a thorough evacuation of the septic interior of the process and the removal of all overhanging bone, the post-aural wound is stitched all excepting a small area at the lower corner of the incision and into this gap a small gauze wick drain is introduced in order to drain off the blood serum which collects as the clot contracts. After the stitching of the post-aural incision the bone cavity fills with blood which if not infected shortly organizes and fills up the cavity.

The gain in time of healing by this process is very considerable over that occupied by the healing by granulation and packing with gauze. Thus by the latter process of healing six weeks and of course in some instances much more time is needed for its completion; whereas by the blood clotting dressing favorable cases will heal in six or eight days and unfavorable ones—those in which the clot becomes infected—may take three weeks, but even that is a great gain to say nothing of the comfort of the patient from the removal of the necessity for packing the wound.

The gauze wick drain which is introduced at the time of the dressing is usually removed at the end of three or four days and not re-introduced. The spiral drainage tube containing gauze may be used instead of the wick.

The menacing point to the successful healing by the blood clot dressing is the fact that the clot is in close proximity to a septic cavity, viz., the middle ear, and it may from there become infected. In order to as far as possible avoid such an infection, it is a good idea to precede the opening of the mastoid by a thorough cleaning of the middle ear and auditory canal and a full top to bottom incision of the tympanum, after which a gauze drain

is introduced through the auditory canal and the mastoid operation proceeded with.

Those cases, of course, which present a necrosis of the inner table of the skull with exposure of the dura or lateral sinus offer a contra-indication to the employment of the blood clot dressing for in such cases the length of healing and the comfort of the patient must take a secondary place to the paramount consideration of the safety of the patient's life.

Then again there are a number of cases cropping up occasionally in the experience of all of us in which in spite of what we look upon as complete operation and the securing thereby of good surgical drainage, the infection seems to march on and on invading new areas and threatening the life of our patient by involvement of the intra-cranial contents.

STREPTOLYTIC SERUM.

In such cases we have a remedy in "streptolytic" serum which stands us well in stead. Indeed I believe that in some cases of mine it has saved the patient's life when surgical intervention has reached the limit of its usefulness.

I do not wish to be misunderstood at this juncture. There is nothing that will take the place of the application of the surgical principles of thorough evacuation of septic foci and the securing of good drainage by surgical means, but that is not all there is to the subject of septic infection and its cure. No, indeed. After we have gone the limit as it were in our surgical work nature takes up the burden, combats and destroys what is left of the infective principle and starts in to repair the damage it and our scalpels have done. Some times she is unequal to the task and the infective principle gets the best of the struggle.

Where this state of affairs is found streptolytic serum shines. By its influence, the flagging cellular forces are stimulated and they will often carry the struggle to a successful termination. Not as a substitute for surgical intervention but as a help to nature's phagocytic process is where streptolytic serum finds its chief field of usefulness.

Allow me to quote briefly two clinical histories which emphasize my position in this matter.

Case 4. J. P., age 30, strong, vigorous man, contracted tonsillitis in March, 1905. On the third day of his tonsillitis he developed

an acute suppurative otitis media which ruptured spontaneously that night.

Two days later, that is on the fifth day of his illness, the pain in the ear not having subsided, the attending physician asked me to see the patient with him. Examination revealed a small perforation of the membrana tympani with considerable bulging. A top to bottom incision of the tympanic membrane was made. In two days more there was no abatement of the pain in spite of the fact that the usual course of treatment had been freely indulged in.

At this time the mastoid was a little red and exquisitely painful to the touch. Temperature ranged from 101° to 102° F. The mastoid operation was now decided upon and was performed on the eighth day of the patient's illness.

This operation, which was the classical mastoid one, involving a thorough opening of the antrum and the other cellular structures of the process, was rewarded by the finding of considerable pus and followed by considerable amelioration of the symptoms both local and constitutional. Improvement continued for fourteen days, but at no time was there that satisfactory clearing up of symptoms which portends a successful termination of the case.

On the fourteenth day after the operation, the patient had a chill, the temperature went up again to $102\frac{1}{2}^{\circ}$ and all of his symptoms of discomfort returned and added to them were those of delirium, extreme restlessness and great pain in the head.

The secondary operation was now decided upon. The wound was reopened and the cavity was thoroughly freed from granulation tissue, and it was found that the walls of the cavity which at the first had been curetted to hard bone had in all directions become softened. This softened bone was removed by careful curetting and the inner table was found carious so that quite a large area of the dura in the middle cerebral fossa was exposed. Absolutely all softened bone was thoroughly removed and this terminated the operative management of the case but by no means its clinical course.

The temperature did not fall nor the symptoms disappear as expected; on the contrary they remained, and in addition there developed in a few days the following group of symptoms which I think you will agree with me were indicative of an intra-cranial lesion.

Three or four days after the second operation the patient said his vision in the right eye was blurred. Examination showed slight

ptosis on that side and a moderately dilated pupil. It reacted sluggishly to light, and an ophthalmoscopic examination revealed optic neuritis on that side. The left eye was normal.

Next day all the symptoms were exaggerated. There was complete ptosis, divergent strabismus, widely dilated pupils, well marked right side optic neuritis. The left eye remained normal throughout.

An intra-cranial operation was considered but rejected because all the symptoms indicated a lesion of the base, probably a meningitis which could not thus be reached.

During this period the patient was often delirious and suffered many curious illusions.

A general toxaemia developed, manifested by localized evidences of inflammation. In succession, all the large joints of the body, larynx, appendix, muscles of respiration, phonation, and deglutition were involved. None of these areas suppurred.

Now, I want to ask you, were we not in the presence of a grave intra-cranial lesion with general toxaemia? Was the case not a critical one? Was his recovery to say the least not very doubtful?

However, after we had arrived at the point where we could do no more surgically, that is shortly after the second operation and in the presence of the optic neuritis and third-nerve paralysis and general toxaemia, we began the hypodermic injection of streptolytic serum.

We gave an injection from ten to twenty centimeters every second day for several weeks until twenty to twenty-five injections had been given, and this patient made an absolutely perfect recovery in four and a half months.

First the third-nerve paralysis cleared up, then the optic neuritis subsided, and last of all the attacks of toxaemia disappeared. There was a gradual fall in the temperature and his final recovery is absolutely perfect. I saw the man not a month ago, a strong, vigorous man again.

What did streptolytic serum do for him?

Case 5. Miss A. R., age 13. Brought to me at the end of eleven days' suffering from an attack of acute suppurative otitis media. Very free discharge through a large tympanic perforation; temperature at ten a. m. 101° , pulse 120, mastoid extremely tender, sagging of postero-superior canal wall. Inasmuch as the child had

been receiving local treatment with free tympanic drainage not accompanied by improved local condition, immediate operation was advised.

The mastoid was opened in the usual way, very early in the operation the lateral sinus was opened and a very profuse hemorrhage occurred which necessitated plugging with iodoform gauze and a discontinuing of the operation before the mastoid could be cleaned out or the antrum entered.

On the second day there was a severe rigor, the patient's temperature arose to 104° and this was followed by a severe sweat and subnormal temperature. The neck was tender in the course of the internal jugular veins, a typical clinical picture of infection of the lateral sinus.

During the next twenty-four hours two similar rocketings of the temperature and the accompanying manifestations were observed.

The plug was removed and no hemorrhage followed. Another day with its pyrotechnic display of chill, temperature, and sweat, was allowed to go by in order to be sure of a firm clot in the wounded sinus. The thorough evacuation of the mastoid was now done, tip and antrum both being thoroughly exposed.

The sinus was then exposed and its contents evacuated until free blood flow was secured from above and below.

The usual dressing was applied for two days, no temperature disturbance was noticed, then a severe chill, temperature 104° and again a sweat.

The child was extremely nervous and irritable and the tenderness in the neck continued.

Immediately after the first chill following the second operation, the use of the streptolytic serum was commenced, twenty to forty cubic centimeters being given in forty-eight hours. The serum was given in this case while we were considering the advisability of the third operation which was to include the dissection of the internal jugular vein to the clavicle.

After a few injections had been given the tenderness began to disappear low down in the neck and it progressed in its improvement from day to day, but that was the only improvement that was noted for sixteen or eighteen days.

Every day and sometimes twice in the twenty-four hours a severe rigor would take place followed by a jump in temperature

to 104°, a sweat and a subnormal temperature, but finally the severity of the manifestation became less until the 29th day after the first operation they ceased and the patient made a perfect recovery. What did the streptolytic serum do in this case?

THE LARGE SKIN GRAFT.

The post-operative healing in the radical operation for chronic suppurative otitis media can be frequently shortened by the employment of the large skin graft. This procedure may be carried out at the time of the original operation or later when the bone cavity is covered with granulation tissue, and in either case the period of healing is very greatly diminished.

These are some of the refinements of surgical technique in aural surgery which have already brought great benefit to us and our patients and have been tried out and found to be of actual sterling worth. This should make up part of our daily work.

For future consideration I would like to merely mention, for time does not admit of their discussion now, the following possibilities: *First*, the application to the treatment in some forms of ear diseases of the principle of artificially producing hyperaemia according to the methods of Bier. *Second*, the application of the principle of vaccination founded on the opsonic index used in septic conditions in other parts of the body. *Third*, the use of bone plombe after the method used in general surgery to fill up the mastoid cavity in some cases where the cavity is very large and the resulting deformity would be great.

57 Fort Street, West.

Bronchoscopy. GOTTSTEIN. *Berliner Klin. Wochenschrift*, No. 9.

Gottstein introduces a funnel shaped piece between the tube and the electric light, and has added a flexible end to the obturator to facilitate the introduction of the instrument.

YANKAUER.

ARTIFICIAL ILLUMINANTS IN LARYNGOSCOPY.

BY A. CRESSY MORRISON, CHICAGO.

The first satisfactory use of a mirror for examining the larynx is to be credited to Manuel Garcia, a singing teacher of London, who published an account of his method in 1855. Tuerck, of Vienna, applied the method to the diagnosis of pathological changes in the larynx, but was discouraged by the uncertainty of obtaining sunlight, till, in 1857, Czermak advocated the use of artificial illumination by the aid of a reflecting perforated mirror worn over the eye. To these two men is to be credited the founding of the practice of laryngoscopy.

The substitution of artificial for natural light was not without regrets, as the literature of this subject shows. Thus, Dr. Geo. Johnson, Professor of Medicine in King's College, wrote in his treatise, "The Laryngoscope," in 1864, page 29:

"All observers are agreed in opinion that the light of the sun, when it can be obtained, is the best means of illuminating the throat."

Again, Dr. Friedrich Semeleder, in his "Rhinoscopy and Laryngoscopy," translated by E. T. Caswell, 1866, page 8, wrote:

"Sunlight can never be fully replaced by artificial light, and its chief advantage consists in its allowing the parts to appear in their natural color."

Two factors combine to make sunlight, when available, desirable for illumination; first, its brilliancy; second, its quality. It is because of the uncertainty of obtaining it, that resource was had to the less brilliant but more certain artificial illuminants. Laryngologists testify, however, that while the latter have furnished much in the way of convenience, because of their availability, they have lacked much by reason of their quality. Thus, Gordon Holmes, L.R.C.P. Edin, in his "The Laryngoscope," 1881, page 11, writes:

"The student should observe the natural color of the parts as seen by solar-light, because the yellow rays of ordinary artificial flames cause the mucous membrane to assume a deceptively florid hue."

The change from one artificial illuminant to another has chiefly been to obtain greater brilliancy. Thus, oil gave way to gas, the ordinary gas flame to the Argand burner, and the latter to the Welsbach mantle so much used to-day. With each of these and

with electric light an objection has been found in the quality, as it affected the ability to appreciate color. Thus, as regards the use of the Welsbach light, Dr. C. G. Coakley writes in his "Manual of Diseases of the Nose and Throat," 1905, pages 39-40:

"The Welsbach hood with a Mackenzie condenser affixed gives a much more brilliant light than that of the ordinary gas-jet, but it is of a greenish-white color.

"One who is accustomed to inspecting the air-passages with an ordinary gas or oil-light will not readily discern with the Welsbach light the slight differences in color that he has been in the habit of noting with either of the other forms of illumination."

The ideal light is, of course, one combining the desirable features of sun-light without the disadvantage of its uncertainty. The feature of brilliancy is in a measure realized in several of our modern illuminants. As we have seen, laryngologists recognize that that quality has not been realized in the illuminants mentioned. Spectral analysis of the various kinds of light reveals to us why this is so. Sun-light contains all the spectral colors and in a certain definite intensity. The artificial lights referred to present marked departures from this standard. The oil lamp furnishes a light containing an excess of yellow and red. The ordinary gas flame and the Argand burner yield a light in which there is a large excess of red rays. The Welsbach burner gives a light containing an excess of green; the incandescent electric light an excess of orange and red. Herein lies the explanation of the failure of these illuminants to reveal to the laryngologist the exact color of the tissues which he is observing. The illuminants lack the adjustment of the component colors that yields a light by which the colors of the parts are made to appear as in day-light. With the introduction of acetylene light, it attracted the attention of laryngologists as to meeting this requirement. Upon this point, Lennox Browne, in "The Throat and Nose," 1899, page 75, writes:

"It is impossible to overestimate the value of good illumination in assisting to obtain a clear and useful view of the larynx. For this reason the question of the relative merits of the different sources of light will be gone into as thoroughly as possible. In the treacherous climate of England, and especially of London, it is almost essential to have recourse to artificial illumination, sun-light being so rarely available. The incandescent mantle gives a superb light, and is even preferred by some to whom the electric current is available." "The new acetaline lamp promises to surpass the incandescent."

More recently, Dr. E. L. Shurly, in "A Treatise on Diseases of the Nose and Throat," 1905, page 36, states:

"Acetylene gas, recently discovered, furnishes a most intense and easily controlled light, quite satisfactory for these examinations, and seems destined to become quite popular."

These opinions find their justification not only in the practical experiences of these and other laryngologists but in the character of acetylene light, as revealed by spectral analysis. It is composed of the seven colors and each within negligible limits of the same intensity as solar light. It is practically sun-light without its uncertainties but yet possessed of its brilliance and quality, the two factors which make sun-light desirable for laryngoscopic illumination. Acetylene light reveals the colorations of the tissue as we know them by daylight, a result long desired and even the possibility of which was, as we have seen, denied by Semeleder.

The abnormal colorations of the parts that are most commonly observed are those dependent upon an alteration of the blood supply. In looking at an anemia of the mucous membrane, it is not till the condition is marked that it is apparent with the ordinary gas or with the Argand burner illumination, while with the Welsbach light it is uncertain whether the condition is a fault of illumination or a moderate degree of real anemia. With an active hyperemia, just the contrary errors are experienced, the light containing an excess of green, obscuring the heightened coloration; while the excessively red lights leave it uncertain to what extent the apparent condition is a real one. More than this, however, these unnatural illuminants fail to bring out in the less marked cases the difference in color, enabling the observer to distinguish between active and passive hyperemias, so as to diagnosticate the true pathological state of the tissue. It is because of these errors that the quality of sun-light has been desirable and that among artificial illuminants acetylene is to be preferred, as the comparison of a series of cases clearly demonstrates.

By the aid of the illuminant with the quality of sun-light, the anemia of a tuberculosis of the mucous membrane is contrasted with greater certainty with the hyperemia usual in carcinoma and syphilis, making this sign of more certain value in the differential diagnosis. When we consider the great need of prompt treatment in syphilitic laryngitis, the value of an exact knowledge of the existence and degree of a hyperemia of the mucous membrane in the pre-ulcerative stage is appreciated. With a syphilitic ulcer, those accustomed to regard its greenish-gray surface and the ad-

jacent reddened mucous membrane as of diagnostic significance will realize the advantage of seeing these colorations at their true value rather than modified by unnatural illumination.

An appreciation of the exact color of the laryngeal tissues is of value in many of the more common pathological conditions. Thus, in the forms of simple laryngitis acetylene illumination provides a distinctly more natural view of the coloration of the tissues than other artificial illuminants. Moreover, in the chronic forms, as well as in other lesions where local treatment is employed, it affords a more correct appreciation of the degree of reaction; not that a certain knowledge of these points is not afforded by any illumination, but that the use of natural light, either solar or acetylene, yields this knowledge more accurately, allowing of the formation of a more correct judgment upon these points.

The relative values of the color qualities of illuminants may be tested in several ways. If a mixture of appropriate colors be made from the dry colors used by artists, which contain small granules, especially yellow, not too intense red and blue or green, it will be noted that by artificial lights other than acetylene the color is diffused and of a certain quality. By day-light the quality is not only different but the coloration is less diffused, permitting of a differentiation to a degree of the individual granules. By acetylene light it will be observed that the quality presented is the same as by day-light and that the color is also less diffused than by the other artificial illuminants.

Similarly, an examination of pathological organs is illustrative of these same differences. The liver or kidney is particularly suitable, the quality of color, distinctness of outlines lobular and cortical striations, respectively: degree of anemia or congestion, pigmentation, appearances dependent upon parenchymatous degeneration, as cloudy swelling, fatty degeneration, etc.; all of these various features being more correctly appreciated by acetylene light than by other artificial illuminants, thus giving the observer the true day-light picture.

With each new light available to laryngologists the hope has been expressed that it is the equivalent of sun-light. That the hope is realized in acetylene we seem justified in believing, because of its great brilliancy and because of its sun-like quality as demonstrated by spectral analysis and by actual use at the hands of those qualified to judge.

No. 157 Michigan Avenue.

THE AFTER-TREATMENT OF THE TONSIL WOUND.*

BY EDWIN PYNCHON, M. D., CHICAGO.

The wound after ordinary tonsillotomy seldom requires any special after-treatment, and the decapitated stump is rarely a source of annoyance to the patient.

As tonsillotomy is at best only a makeshift operation, and gives only partial relief from the disadvantages and dangers associated with the pathologic or hypertrophied tonsil, the trend of recent years is toward thorough removal or tonsillectomy, whereby the tonsil is removed in its entirety, including its capsule, and the entire supratonsillar fossa exposed.

Such thorough removal by any process, be it either by cautery dissection or with cutting instruments, causes of necessity a deep depression or wound, and during the process of healing is benefited by rational after-treatment to modify the soreness and hasten a favorable termination.

The varying degree of soreness present in different cases, in fact even between the two sides in the same patient wherein both tonsils have been removed by the same method, leaving wounds equally extensive and deep, has often been to me an unexplained enigma. The size of the wound, in fact, does not seem to be a factor in the formula, for not infrequently the smaller wound has evidenced the greater reaction. Neither has the "wounding of the pillars," upon which some writers have laid such stress, been the cause of the reaction in these cases cited, in which the soreness has varied between the two wounds, for in each case the lines of incision have been the same.

In fact, the leaving of too much of that which is looked upon as the anterior pillar I have often observed was a source of aggravation instead of being a benefit. Regarding this feature an explanation is required. When the tonsil is in repose in its bed the posterior line of the anterior pillar seems to lie well over the tonsil, but when the tonsil is pulled out of its bed the muscular fibers, which really constitute the pillar, are seen to advance, while the posterior portion of the mucous membrane, being devoid of muscular fibers, is stretched and shown attached to the tonsil which, through the trac-

*Read at the Thirteenth Annual Meeting of the American Academy of Ophthalmology and Oto-Laryngology, held at Cleveland, Ohio, August 27-29, 1908.

tion applied, is caused to move about. Much of this portion of the mucous membrane I find it wise to remove with the tonsil.

When this hypertrophied membrane extends downward and backward to the posterior pillar, covering the lower portion of the tonsil, it is known as the *plica triangularis*, but often this latter described extension is not present. In either case, whether present with or without the *plica triangularis*, my experience has taught me that a liberal removal thereof is beneficial. I therefore aim to have a wound the side walls of which slope toward the central base and the contour of which from front to rear is oval. By such sacrifice of the hypertrophied mucous membrane of the anterior pillar there is facilitated a better removal of the anterior portion of the tonsil which has been named the "velar lobe."

In the same way, in order to expose and clear out the supra-tonsillar fossa, it is necessary to have the lateral incisions join at a point somewhat higher than seems required when the tonsil is inspected when in repose in its bed. In fact, the apex of the superior portion of the wound extends as high or even higher than a line extending horizontally from the base of the uvula.

The wound after a complete tonsillectomy is so planned that no portion of the outer membrane is allowed to extend over a recess; in fact, so the resulting wound is free and open.

And now: What is the chief cause of the soreness which at times is so pronounced? In the case of "cautery dissection," those who employ other methods allege that the soreness is due to the combination of a burn with a cut. As previously stated, my personal experience negates this theory. In fact, the sorest throat following a tonsillectomy of which I know occurred in the practice of a confrere in a case wherein the tonsils were removed with cutting instruments. I have also known of marked soreness following the use of the snare, and furthermore of pronounced hemorrhage after the use of this bloodless implement, as alleged by some—the cold snare.

The degree of soreness following a radical removal of the tonsil seems to be in part due to the idiosyncrasy or physical condition of the patient. Post-operative infection is probably the most frequent cause thereof. Infection at the time of the operation may also occur—in case cutting instruments are employed, though in this age of aseptic surgery this cause may be considered as being of infrequent occurrence. Of course, from its very nature, the cautery dissection operation cannot receive this blame as it would be rather difficult for

germs to maintain their normal activity when in contact with a red-hot irido-platinum electrode.

I have frequently noticed that there was a more marked reaction in case the tonsil had been subject to attacks of quinsy. Generally speaking, adults experience more soreness than children, adult men more soreness than adult women, and fat people more soreness than lean people. A fat German of forty or over has generally seemed to be the greatest sufferer. Can the large amount of lager which the average Teuton absorbs be considered as a predisposing cause for this soreness?

After a radical removal of the tonsil by any method, the wound soon becomes coated with a layer of white necrotic tissue. In case of the cautery dissection operation this is immediately produced by the burn and the solution of silver thereafter applied. As soon as formed, being an early protective to the wound to prevent hemorrhage, nature begins a process whereby its dissolution is effected through decay. Through the absorption of ptomaines from this slough, as well as from bacterial infection of the open wound, we have the most rational explanation of the soreness which begins to be annoying a few hours after the operation.

With this understanding, the rationale becomes apparent for very frequent cleansings of the wound. For many years I depended chiefly upon gargles and have often observed their efficiency when faithfully and continuously employed, say every ten or fifteen minutes for the first twelve hours and less frequently thereafter. The great trouble has been that the gargle has not been employed with sufficient persistence before the soreness developed; in other words, prior to the time when absorption of the ptomaines from dead tissue begins.

Another reason why even frequent gargling in some cases has not prevented marked soreness is due to the fact that all patients are not equally adept in the use of the gargle, and in thus cleansing the wound. This particularly applies in case of small children. Lately I have been employing with much satisfaction, as an adjunct to the gargle, the use of a suitable syringe whereby the wound can be better cleansed every hour or two. The best syringe I have found for this purpose is the one-half ounce hard rubber post-nasal syringe, whereby both sufficient force and a spray stream are secured so the wound may be effectively washed. As a cleansing agent I depend chiefly upon a two percent solution of Merck's sodium bicarbonate, which means a heaping teaspoonful to a large glass of water hold-

ing one-half pint. If instead of plain water there be mixed therewith twenty-five percent of some one of the aromatic vegetable antiseptics, its taste as well as efficiency is improved. Thymoline or Oleoseptine are both good, and are the best agents of this class of which I know, the latter being the more aromatic of the two.

After the first week I generally substitute either a gargle of the chlorate of potash or else a weak solution of the tincture of myrrh, about fifteen drops to a wineglassful of water. Occasionally a slight degree of fever is manifested. This is easily controlled by an hourly dose of one drop of the tincture of aconite root. The diaphoresis thus produced seems also to favorably affect the soreness of the wound. If the tongue becomes much coated, I order a saline purge at night, preferably the sulphate of magnesia. This may be repeated if required.

It occasionally occurs at the time of the operation, no matter how carefully done, that there is overlooked a little of the tonsillar tissue which should have been removed. This is most often due to the operative field having been somewhat obscured by even a trifling hemorrhage. Upon a subsequent visit, when there is lost the shrinking effect due to the hemorrhage, as well as to the cocaine if local anesthesia was employed, and when even a small particle has become materially increased in size through the inflammation present, it may seem that an incomplete operation has been done. Two or three applications of a twenty percent solution of cocaine to denuded and projecting points will in a brief time give complete anesthesia, when with a suitable tonsil punch¹ these points of roughness or elevation can be easily and painlessly removed so as to give the wound its correct oval contour as previously described.

During the healing of the wound the tendency for it to fill up with granulation tissue differs in different patients. With some a pretty depression or cavity remains without any special effort on the part of the surgeon, while with other patients there is a marked tendency to over-granulation or filling up of the wound. In this way is explained that which has been regarded as cicatricial contraction. As far as complete relief from the symptoms or conditions which called for the operation is concerned, this is immaterial, but for cosmetic and other reasons is undesirable and therefore calls for special treatment.

One of the structural disadvantages of the submerged tonsil is that through its adhesion to the pillars their independence and mobility are impaired, and thus also, secondary thereto, free and full mo-

tion of the soft palate with its dependent uvula. Through free and unrestrained motion of these structures the palato-nasal opening may be greatly enlarged by action of the associate muscles, thus permitting a larger column of air to enter the post-nasal space in vocalization, which intensifies the power of the high register. Furthermore, by muscular control of the size of this opening and the tremor of the soft palate easily attained when the parts are free and mobile, the head tones are softened and beautified.

For these reasons, during the healing of the tonsil wound, and formation of new tissue incident thereto, it is desirable that excessive growth shall be checked or controlled so there will remain permanently between the pillars some concavity. The pillars in vocalization can thus somewhat approximate.

For the purpose of controlling exuberant granulation I depend upon daily massage with a cotton wound applicator suitably medicated. After experimenting with many agents I always return to my first selection, the "Eisen-Glycerin" of the Vienna Clinics, consisting of equal parts of the muriated tincture of iron and glycerin. An extra long applicator with a handle as shown in figure 1, is most convenient for this purpose.



Figure 1. Tonsil Wound Masseur ($\frac{1}{2}$ size).

Iron is the most efficient agent I can find to diminish the soreness. In fact, in some cases I additionally prescribe an iron mixture, as recommended so heartily by Bosworth, consisting of one-half dram or one dram of the muriated tincture to the ounce of glycerin and given in teaspoonful doses every two hours, swallowed slowly and undiluted.

For the first few days, prior to the massage with Eisen-glycerin, I apply peroxide of hydrogen after cleansing with an alkaline spray. This seems to soften the eschar and hasten its dissolution. The force with which the massage is applied is of course regulated by the degree of soreness present. At the start the massage is gentle, but can be increased day by day until about the eighth day, when sufficient force may be employed to rub off the filling-in tissue so as to produce slight hemorrhage. In this way the surface is caused to become smooth and firm. In a few days no further hemorrhage can be thus produced.

Occasionally, where an unusual degree of new tissue formation takes place, say about the tenth or twelfth day, and more particularly when treatments have been skipped or omitted for even three or four days, the new tissue formations will be found to be too dense to be suitably rubbed down with the cotton-wrapped masseur, so that it becomes desirable to resort to a more efficient procedure. In such cases I employ the tonsil wound rasp (figure 2). After its use once in most cases, and possibly on a succeeding day in rare cases, the



Figure 2. Author's Tonsil Wound Rasp (2-5 size).

treatment is completed with the masseur until the wound is fully healed.

When the ideal result desired is attained, the mucous membrane covering of all the structures involved becomes as smooth as the roof of the mouth, with no visible depressions or remaining crypts on the site of the tonsil, and eventually a fading out of that characteristic arch of redness previously described² which always constitutes a feature of the picture seen in the examination of a throat in which are present submerged or diseased tonsils. Lastly, a slight depression between the pillars is present and no bulging out at this point occurs when the patient is made to gag, as always occurs when even a deeply submerged tonsil is ensconced between the faucial pillars.

REFERENCES:

1. Tonsillectomy in Children Under General Anesthesia, Jour. Amer. Med. Assn., June 20, 1908.

2. The Degenerate Tonsil, Jour. Amer. Med. Assn., Mar. 21, 1903.

103 State Street.

THE MECHANICAL FACTORS IN COLD TAKING AND THEIR THERAPEUTIC INTERPRETATION.*

BY DAVID C. HILTON, A. M., M. D., LINCOLN, NEBRASKA.

By taking cold, the common, uncomplicated form of cold in the head, known as simple acute rhinitis, is referred to.

From an etiologic standpoint, the term *simple*, as here used, stands for an hiatus in our knowledge of exciting causes. Accordingly, the phrase simple acute rhinitis is not known to apply to a disease entity. It more strictly designates a residue of rhinitides exhibiting a single symptom-sign complex as their common token. With the advent of a thorough understanding of the primary exciting causes underlying this complex, the residue will be reclassified on an etiologic basis. The commanding importance of bacteriology in medicine has begotten the prejudice that affections denominated by terms ending in *itis* have a bacteriologic foundation, as being incident to and determined by successful inoculation with one or more specific organisms. Bacteriologic researches have failed so far to fulfill this expectation with reference to simple acute rhinitis.

From a symptomatologic standpoint, simple acute rhinitis represents a symptom-sign complex associated with mechanical deviations within the nose and altered nasal secretions, that taken together are unique and define it from all other types. Etiologic considerations are impertinent in this construction of rhinitis, and impotent in upsetting its foundation in fact and clinical utility for the present.

The problems in the diagnosis and treatment of acute rhinitis are symptomatologic, mechanical, physio-chemic, and etiologic. Symptomatologically, there is a unique symptom-sign complex. Mechanically, there is a deviation from normal structural relations within the nose. Physio-chemically, there are meagerly understood alterations in the constitution and activities of cell substance, and of sera as manifested in modified secretions, etc., during attacks. Etiologically, every case is the effect of a primary or remote exciting cause. This is the sole invariable antecedent of the entire pathologic process, and is conditioned by predisposing causes which are

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qualifying circumstances, whose absence would modify the action of the exciting cause or make it of no avail whatever.

The mechanical factors in cold taking are also etiologic. None of these is to be construed as a primary exciting cause. If coincident with the primary cause, they may be predisposing causes qualifying its action. If sequential, they may be effects with respect to it, but with respect to various incident phases of the disease picture they may abide as determining causes. In the one connection, their absence may modify or disallow the action of the primary exciting cause, and in the other, various expressions of the disease. It is this double role of mechanical factors in cold taking that establishes their importance. This discussion is confined to those that are anatomic.

The anatomic factors fall into two groups, according as they include the stationary or the displaceable structural peculiarities of the nasal cavities. With reference to the primary exciting causes of a given attack, the stationary structures are coincident, and may be predisposing causes, whereas the displaceable structures may assume a pathologic malposition as an effect of its action. Stationary structural peculiarities are deflections of the septum, exostoses, echondroses, certain irregularities in size or position of the turbinate bones, and other innate or acquired abnormalities of position, form, and size of parts. The displaceable structures are the soft tissues overlying the bony wall that are subject to rapid alterations in thickness from active or passive congestion, or oedema. Conspicuous among these is the erectile tissue of the middle and lower turbinate bodies.

The pathologic importance of these anatomic peculiarities in cold taking is that of obstructions to drainage, and less frequently to aeration.

The feature of faulty aeration that concerns cold taking is the oscillation of air pressures, characterized by inspiratory rarefaction or partial vacuum, and incident to an occlusion of both nasal cavities sufficient to associate the filling of the respiratory tract during chest expansion with a momentary negative air pressure proximal to the occlusion. Unless obviated by mouth breathing, the rhythmic recurrence of negative air pressure induces passive hyperemia, swelling of the soft parts, and hyperplasia, that tend to further occlusion, and thereby to increased predisposition to cold taking.

To appreciate fully the pathologic significance of faulty drainage, the nasal cavities must be looked upon as homologous and analog-

ous in many essential particulars to the sacculated hollow viscera having proximal and distal communications, i. e., the stomach, the urinary bladder, etc. The nasal cavities resemble various sacculated hollow viscera in being cavities or recesses with a large expanse of surface, and with a cross-sectional circumference disproportionate to that of their proximal and distal communications. They also resemble in having a secreting mucosa and in presenting the erectile tissue of the nasal submucosa as remotely analogous to the motor apparatus possessed by comparable viscera in their tunica muscularis.

The conception of the nasal apparatus as a passage—duct, tube—is extremely inadequate, if not erroneous. This misconception of nasal morphology goes hand in hand with a mistaken notion of nasal physiology, namely, that the functions of the nasal apparatus are quantitative aeration and olfaction. The term nasal passages should be limited to the anterior and posterior nares,—i. e., to the distal and proximal communications of the nasal cavities. The idea that this elaborate mechanism is merely an air passage partly subserving for olfaction, leads to misapplied or abortive therapeutics.

As the maintenance of adequate drainage is essential to the physiologic integrity of the comparable hollow viscera, and the cure of many functional and organic diseases is accomplished by the re-establishment of drainage, so it is with respect to the nasal cavities, especially in reference to cold taking.

The drainage problem in the two cases is technically very different, however. Drainage of a sac-shaped viscus is simple and collective in that the sac is simple and unitary. Drainage of the nasal cavities is multiple and distributive, for the cavities are loculate, and the places where secretions can be locked off are scattered. In a sac-shaped viscus, drainage has to do with provision for a sufficient outlet to the most dependent part. In the nasal cavities, the space is divided and subdivided by turbinate bodies, and various other mural irregularities, so that drainage of any one portion does not guarantee drainage of the remainder.

The notion that nasal drainage is simple is associated with the idea that the free passage of air is a criterion of sufficient drainage. Free nasal aeration only demonstrates partial patency, and may be associated with insufficient drainage, especially in the vicinity of the middle turbinate and above it.

Cold taking, from a mechanical point of view, is merely an incident in the history of a poorly drained nasal apparatus. To ascer-

tain the relation of cold in the head to nasal drainage, it is only necessary to associate the symptom-sign complex with concomitant anatomic peculiarities in the nasal cavities. The primary exciting

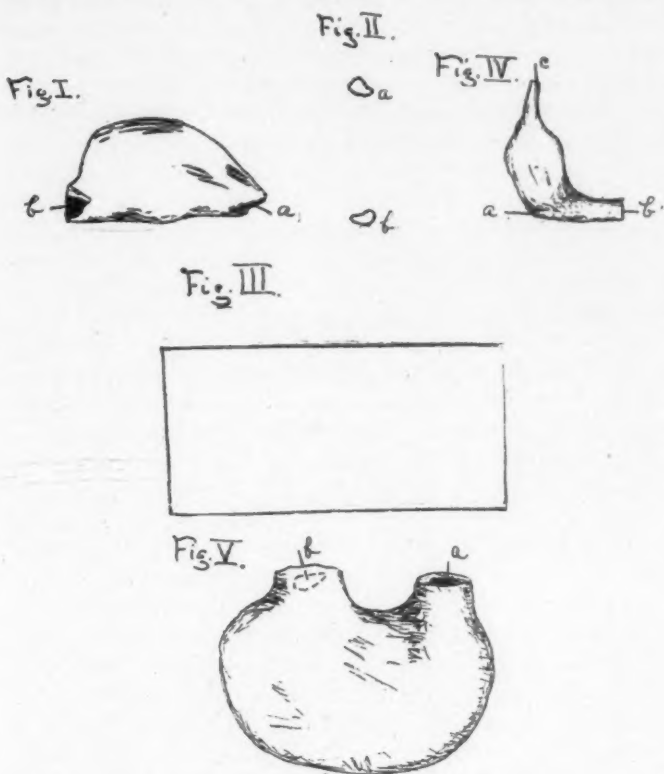


Fig. I. The left nasal cavity, actual size,—the mucosa and submucosa separated from their bony environment; a, the anterior naris; b, the posterior naris. From foetus of seven months.

Fig. II. a, b, are the anterior and posterior nares in cross section, showing actual size of the apertures. Same foetus.

Fig. III. The actual surface area of the mucosa of the left nasal cavity, (Fig. I), $2\frac{1}{4}$ square inches.

Fig. IV. The urinary bladder; a, vesical extremity of left ureter; b, urethra; c, urachus. Same foetus.

Fig. V. The stomach; a, cardiac orifice; b, pyloric orifice. Same foetus.

cause of the cold, whether a specific organism, local irritants, lithaemia, intestinal autointoxication, atmospheric changes, etc., brings on increased nasal secretion, congestion, and tumefaction of the

submucosa, with stoppage of part or all of one or both cavities. Incident to mechanical and physio-chemic changes in the soft parts, the sensory nerve endings therein are often stimulated to entail reflex symptoms, such as sneezing, headache, lachrymation, etc. The ensuing hyperpyrexia, malaise, anorexia, etc., point to a general intoxication which may be due to the action of the primary exciting cause, to secondary infection in the pent-up secretions, or to independent physio-chemic changes in the affected tissues. If drainage of the nasal cavities is not re-established by interference, the cold pursues a self-limited cycle, the secretion changing from watery to mucoid, and thick muco-purulent. If drainage is promptly re-established, the symptom-sign complex subsides more rapidly. If adequate distributive drainage is maintained before the mucous membrane has become pyogenic, the complex disappears with greater spontaneity.

Curative measures look to the inhibition or the abortion of the attacks. Treatment from an etiologic standpoint suggests the removal of the primary exciting cause. In routine practice, this is largely impracticable, as it may demand changes in the patient's environment, habits, or constitution that cannot be accomplished. The future may hold vaccines, or immunizing sera, that will avail much in this direction. As a substitute measure, the action of the primary exciting cause may be inhibited ordinarily, and acute attacks mitigated by altering certain mechanical peculiarities in the nasal cavities.

The means for altering the structural relations in the nasal cavities may be divided into those that effect transitory, and those that effect permanent modifications.

The remedies having a transitory effect act only on the soft tissues, and especially on the erectile tissues of the turbinate bodies. They include several internal remedies, massage, electricity, dry and moist heat or cold, changes in atmospheric pressure and humidity, topical applications to the surface of the cavities, and hypodermic injections in the course of the principal nerves conveying afferent impulses from the nasal mucosa.

Topical applications to the nasal cavities re-establish drainage to the extent that they reduce the tumefaction of the soft tissues. Many of them are advertised as antiseptic, sedative, demulcent, and otherwise curative irrigants to be used as sprays by the aid of elaborate, showy, and costly machines. The effect of all these topical applications is transient, and their dominant therapeutic virtue is pallia-

tion. Their important value and proper use is as symptomatic remedies to relieve acute attacks. To alter permanently any mechanical deviations in nasal structure, they are of no avail. Yet patients frequently present themselves for relief from repeated cold taking and its sequelae, who have religiously followed a course of such treatment for months, with the hope of a cure. Commercial houses continually importune the profession to buy apparatus and special formulae as a means for the doctor to command a reputation in these cases. Aside from services for temporary relief, and as one means of cleansing, their appearance in a doctor's office subserves no larger therapeutic purpose than that of a mind cure.

The permanent re-establishment of adequate distributive drainage of the nasal cavities is a mechanical problem, and is successfully accomplished by mechanical means. The means to this end include: 1, chemical cautery; 2, the actual cautery and galvano-cautery; 3, electrolysis (submucous, unipolar or bipolar); 4, incisions,—simple incisions, resections, exsections; 5, ecrasement; 6, torsion; 7, dilatation,—splints, tents, instrumental dilators, etc.

The cardinal principles to be observed by the surgeon are: (1) the correction of fixed deformities and the prevention of transient malpositions; (2) the conservation of tissues; (3) the destruction of tissues.

For the correction of fixed deformities involving bony tissues, incisions, ecrasement, or mechanical appliances are usually elected. The utility of splints in correcting deviations of the nasal septum comes far short of popular expectations, and they are often unduly severe in proportion to the benefits received. Splint operations improve the patency of the affected side as evidenced by freer aeration, but do not necessarily correct faulty drainage to a corresponding degree. An operation, such as partial submucous resection of the cartilaginous and bony septum, by a unilateral flap, is done with greater comfort to the patient, and followed by more desirable therapeutic effects. For the correction of deformities confined to the soft tissues, the cautery or electrolysis is often substituted for incision.

The prevention of transient malpositions means the inhibition of intumescent or oedematous conditions, and is commonly attained by linear cauterization or incision. To locate adventitious, circumscribed oedemas in the nasal cavities often requires persistent hunting, and for them to elude the watchfulness of the clinician may mean therapeutic defeat. In order to discover the area involved,

patients may be required to present themselves at any time the symptoms owing thereto come on. The following case is typical of this situation.

Mrs. P., middle-aged, complained in 1905 of frequently taking cold and of concurrent asthmatic attacks. Correction of mechanical faults in the nasal cavities was followed by disappearance of the trouble for several months. Then it recurred in a milder form. Frequent examinations of the respiratory tract were made without observing any mechanical anomalies. Finally, during one attack, an acute bilateral oedema of the septum was noted presenting in the posterior nares. This was treated surgically so as to anchor the mucosa covering in the area to the underlying bone, and permanent relief followed.

The principle of the conservation of tissues is precautionary, that the latter end be not worse than the first. The nasal apparatus is a combination of delicately balanced physiologic mechanisms, and surgical interference should be strictly limited to those features of morbid anatomy that unbalance normal functions. To overstep this limit is meddlesome and unsurgical, and may add to a burden of ills.

Unless otherwise indicated, cauterizations should be linear, or electrolysis used to save needed mucosa, and partial resections should be substituted for ablations,—turbinotomy versus turbinectomy, etc. The unnecessary sacrifice of soft tissues should be avoided by flap operations. Thorough work should be done at each sitting, as several light operations may destroy more valuable tissue than one radical procedure for a given effect.

So far as this principle applies to nasal drainage, it should be remembered that the latter function depends on a proper balance between cavernous dimensions and cavernous surfaces, secretion and evaporation.

When the nasal cavities have too great diameters and too little secreting surface, drainage is inadequate from evaporation and desiccation of secretions on the nasal walls. This latter condition, being associated with atrophy of the glandular tissues and perverted secretions, is to be avoided.

When meddlesome surgery overdoes matters in "cleaning out" the cavities and cures the patient of the tendency to recurrent cold taking by substituting a condition akin to atrophic rhinitis, it neither relieves suffering nor prolongs life.

The principle of the destruction of tissues comprehends the practice of increasing diameters by the removal of redundant parts or pathologic growths, and of altering parts by wound-making to the end of obtaining curative effects through wound healing or the regeneration of tissues. The latter therapeutic measure properly attaches to a fourth unmentioned principle, i. e., the regeneration of tissues; but since our mastery of regeneration is still confined to an imperfect knowledge of wound healing, it is conveniently classified with the third. The benefits derived from wound healing are incident to the formation of scar tissue by granulation, to secondary shrinkage of this formation, and to its inelasticity. The regenerated tissue serves to anchor contiguous parts subject to tumefaction, to an underlying hard base. For this purpose the preliminary destruction of tissue should be just sufficient to obtain the result.

The therapeutic importance of the mechanical factors in taking cold does not supplant the desirability of removing primary exciting causes; nor dissipate the necessity of symptomatic treatment by the internal and topical use of medicines and other agencies in acute attacks; nor forestall the value of physical and chemical researches into the unexplored physiology of the affection. It does not appear possible to maintain absolutely perfect and uninterrupted nasal drainage, nor if it were possible does it follow that this would immunize a person against all inflammatory attacks. The recognition of the mechanical factors in cold taking does, however, give a perspective wherein the taking of nasal cold is ordinarily seen to be incident to abiding mechanical defects. Thus far, it can demonstrate that the relief or abortion of acute attacks implies the re-establishment of drainage and near-constant air pressure, and that herein is a basis of procedure which prevents attacks by disallowing the action of the primary exciting cause, and modifies them by removing a necessary link in a chain of sequences.

No. 1240 O Street.

Simple and Vibratory Catheterization of the Tube with the Use of Carbonic Acid Gas. GEORG WARNECKE. *Archiv f. Ohrenheilkunde*, July, 1906.

A description of the apparatus and of the method of its employment.

YANKAUER.

DEMONSTRATION OF A NEW METHOD OF POSTERIOR NASAL TAMPONADE.*

BY J. WOLFF, M. D., NEW YORK.

Hitherto, when we have had occasion to perform posterior nasal tamponade, we have been in the habit of drawing some large, bulky tampon of gauze, or gauze and cotton, into the posterior nares, at the cost of great discomfort to the patient on account of the size of the plug and the difficulty of drawing it into place. Furthermore, it was necessary to leave a string attached to the tampon posteriorly, in the patient's mouth for twenty-four hours; so that the plug might be withdrawn, also with considerable rough handling, by the same way it was introduced.

To avoid these objections I have devised a new form of tampon. The latter is made of a long strip of iodoform gauze, which is folded several times upon itself, the edges being turned in till we have a thin tampon about twelve inches long and about three-quarters of an inch wide, containing eight layers of gauze. The open side of the tampon is sewed up along its edge. At the anterior end of the tampon is attached a strong silk cord about fifteen inches long, with a single knot at its free end. This may be called "string No. 1." Three inches behind the point of attachment of string 1, string No. 2 is attached, and its free end drawn through the interior of the tampon till it emerges just behind the attachment of string 1. String No. 2 has two knots at its free end, and is a little shorter than string No. 1. String No. 3 is attached three inches behind string No. 2, and also is led through the tampon, emerging behind string No. 2, and has three knots at its free end, and is a little shorter than string 2. The same process is repeated with strings Nos. 4 and 5, each having its corresponding number of knots, and being a little shorter than the preceding one. String No. 5 is attached to the posterior end of the tampon.

The tampon is inserted as follows: A separate string is passed through the nose and out of the mouth in the usual manner. The five strings of the tampon are attached to the mouth end of this string and drawn out through the nose by pulling on the nose end. The five tampon strings are then pulled together, until the anterior

*Read before the Section on Laryngology and Rhinology of the New York Academy of Medicine, January 22, 1908.—See *The Laryngoscope* March, 1908, page 229.

end of the slender tampon appears at the nostril. The thumb of one hand is then pressed against the nostril, and string 1 is allowed to hang down. The remaining four strings are then pulled on together, while firm counterpressure is made with the thumb. This has the effect of throwing the section of the tampon between strings Nos. 1 and 2 into folds, and of evenly advancing the remainder of the tampon. When traction causes no further yielding of the tampon, string No. 2 is dropped, and the three remaining strings are pulled on together. This causes the section between strings Nos. 2 and 3 to fold up, and the rest of the tampon to advance into the nose. This process is repeated until the whole tampon is firmly packed in the nose, and the bleeding controlled. The strings are identified by the number of knots at their ends. To facilitate the rounding of the soft palate by the tampon, I have had a flat ring attached to the posterior surface of a flat palate retractor, and the strings and tampon pass through this ring as they enter the pharynx, and do not even touch the soft palate while being drawn forward.

The whole process of packing can easily be done in two minutes and without any violence. When the tampon has been in place a sufficient length of time, it is drawn out of the anterior naris, so that it is entirely unnecessary to leave the annoying string in the mouth. The tampon is being put up in aseptic form, ready for use, by E. B. Meyrowitz.

No. 108 East 62d Street.

Twelve Temporal Bones from Seven Cases of Congenital Lues.

RUDOLPH PANSE. *Archiv f. Ohrenheilkunde*, May, 1906.

The author examined the temporal bones of seven cases of congenital lues and found changes in the labyrinth similar to the changes usually found in cases of congenital deafness. Some of these were characterized especially by hemorrhages and suppuration of the labyrinth.

YANKAUER.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON LARYNGOLOGY AND RHINOLOGY.

Regular Meeting, December 23, 1908.

PRESENTATION OF CASES.

Dentigerous Cyst. Report of a Case. By T. J. HARRIS, M. D.

The patient applied for treatment on Saturday last, with the history of a discharge through the tooth socket. The tooth itself had been recently extracted by a dentist. A probe inserted entered a large cavity, and, suspecting disease of the antrum, the patient was ordered into the hospital for operation. On Wednesday, the canine fossa operation was performed, and upon removing the entire bony wall it was discovered that the probe had gone completely through the socket but there was no communication with the cavity of the antrum. Further investigation revealed a large dentigerous cyst, as large as the end of the middle finger. There was no communication between the cyst and the main antrum cavity. The wall or partition between the cyst and the antrum was removed, making one large cavity. An unusual feature of the case was the large number of septa or diverticula in the antrum. There were also several recesses, one of these recesses extending up behind the eyeball itself, and another one seemed almost to communicate with the wing of the sphenoid. There appeared to be no disease of the antrum itself, and the peculiarity of the case was the very large dentigerous cyst. Dr. Harris said that perhaps he had overlooked these cases in the past, but had never seen them until within the past year, when he had had three or four under his care. In one case a little child had a marked bulging of the anterior wall and a peculiar crowding and displacement of the inner wall in the mouth. There was bulging on both sides, and when this was punctured fluid was elicited. The child, however, disappeared without operation. The course pursued in the case just reported was in his judgment the only correct one—i. e., the complete radical operation, attacking the cyst wall and breaking it down, throwing the cyst cavity into the main antrum cavity.

DISCUSSION.

DR. FREUDENTHAL said that these cases could not be very numerous because he had been looking for them for years, being anxious to see such a condition, and had never seen one.

DR. CARTER said that three years ago he had seen a dentigerous cyst, but it was not diagnosed prior to operation. It was near the root of the second bicuspid tooth. It was very much inflamed and presented quite a bulging over the alveolar process—the bulging being outward rather than toward the antrum. The operation consisted in breaking down the outer wall and thoroughly scraping away the membrane that lined it. The patient made an uneventful recovery.

DR. FREUDENTHAL told of a young man, twenty years of age, who was sent to the hospital with a diagnosis of empyema of the antrum. The antrum was opened from the canine fossa and revealed a soft mass, which was easily removed. Later, to his surprise, he learned that he had dealt with a giant-celled sarcoma. Afterwards he elicited the history of the young man, and found that he had been playing ball and his face had been struck. He complained of some pain and purulent discharge in the nose, and claimed that his whole trouble had started from that injury. Of course if the Doctor had had the pathological diagnosis when he operated, he would have removed the superior maxillary immediately, but the patient would not consent to this now. Was this traumatism really the cause of the sarcoma? Judging from malignant tumors in other parts of the body, it seems possible, and he would like to know if any of the members had had any experience in such cases.

DR. SMITH said that he had never seen a case of sarcoma of the face arising from an injury, but had seen an osteo-sarcoma of the nose in a horse following a blow. The horse lived about twelve months after receiving the blow, and died of suffocation. He had not had a microscopical examination made, but in discussing the symptoms and appearances with Dr. Jonathan Wright, both had concluded that it was unmistakably osteo-sarcoma. Dr. Wright reported a case of osteo-sarcoma of the nose of an ox in the *Medical Record*, April 20, 1895, in which instance the tumor resulted from a blow, and the microscopical findings confirmed the diagnosis. Reasoning from these two cases, he would infer that a similar condition could readily occur in man.

DR. HARRIS said that in his case the cyst was in connection with the first molar tooth. He has another case under his care in which he followed the method suggested by Dr. Carter, of not doing the

radical operation, but opening and thoroughly curetting. After three months, however, the case is not yet completely healed, and he is confident that had he pursued the method adopted in the case reported to-night it would long since have been well.

PRESENTATION OF PAPERS.

Symposium.—Eruptive Conditions Manifested in the Nose and Throat: Their Consideration—

- a. **From a Dermatological Standpoint.** By J. A. FORDYCE, M.D.
 - b. **From a Pediatric Standpoint.** By LOUIS FISCHER, M. D.
 - c. **From a Laryngological Standpoint.** By FELIX COHN, M. D.
- (b and c to be published in full in subsequent issues of THE LARYNGOSCOPE.)

Some Affections of the Oral and Nasal Cavities which are Related to Skin Diseases. By JOHN A. FORDYCE, M. D.

ABSTRACT.

DR. FORDYCE said that the correlation of the cutaneous and mucous membrane structures was recognized not only in purely dermatological cases, where, in many instances, we relied upon mucous membrane lesions to establish a diagnosis in obscure diseases, but also in general conditions, as in the acute contagious exanthemata, where much importance was attached to the primary Koplik spots on the buccal and labial mucosae in measles, the vesicles and pustules in the mouth and pharynx of small-pox and varicella patients, and some though perhaps less significance to the strawberry tongue and pharyngitis in scarlet fever. For anatomical reasons the question of diagnosis is more complicated in mucous membrane lesions than in cutaneous ones, that is, the color contrast is less, and owing to moisture and maceration primary lesions soon undergo modifications or lose their characteristics by secondary infection.

A parallel was drawn between eczema and mucous membrane catarrhs, both having a similar pathological and etiological basis. This could be extended to their symptomatology, the pruritus of the skin being the analogue of the coughing and sneezing following catarrhs of the respiratory tract. The absence of febrile disturbances in cutaneous catarrhs had been accounted for by the heat radiation from the surface and the elimination of toxic products through the excretion. Speaking of the theory of the alternation of cutaneous and mucous membrane affections, Dr. Fordyce said in his own experience he had been unable to substantiate this phenomenon.

The relationship between the mucosa and the integument was frequently demonstrable in dermatological practice, where it is a common observation to find a catarrhal condition of the skin set up by one of the mucous membranes, and, conversely, the mucous membranes may be involved by autoinoculation from the skin. This was illustrated by the eczematoid dermatitis produced by discharges from the eye, ear, nose, mouth or genitals; in the eczema of the cheeks in children who sleep with their mouths open or are the subjects of adenoids; in sycosis of the lip from an infectious nasal discharge; in facial erysipelas or the recurring erysipelatoid flush from picking the nose. Impetigo contagiosa may precede, accompany or follow the skin eruption, and in the impetigo of Bockhart, which is staphylogenic in origin, and often produced by scratching in pruritic diseases, the lips and mouth are eroded, and even phlegmonous lesions may be produced. In a case of fulminating ecthyma (ecthyma terebrant) which Dr. Fordyce reported several years ago, the lesion began on the hand, and by autoinfection extended to other parts of the body, and involved the mucous surfaces of the lips, soft palate, nose, larynx and trachea. This case was accompanied by marked septic symptoms and had a fatal issue.

Of the bullous diseases which attack the mucous membrane, it is the rule for pemphigus vegetans primarily to involve the mouth, while pemphigus vulgaris and pemphigus foliaceus do so less constantly. In the two latter, however, early manifestations in the mouth and larynx are not uncommon, and the presence of bullae and erosions in the oral cavity, accompanied by constitutional disturbance and loss of weight, should lead to the suspicion of a beginning pemphigus. To emphasize this fact a case recently seen was cited. A woman, with erosions of the throat, tongue, mouth, lips and nasal passages, stated that the lesions had been present for some months, that she had lost thirty pounds in weight and was generally weakened. She was observed for a period of three months, during which time there were new outbreaks in the mouth, attended by great prostration. At the end of this time a few bullae appeared on her trunk, and shortly after the entire body was covered, so that there no longer remained any question as to the diagnosis.

In making a diagnosis of mucous membrane pemphigus, care must be observed, as there are certain benign recurring bullous affections of the mouth and skin which come and go for years without influencing the general health and which have not been assigned to any known nosological group. Attention was also called to the

cases of infectious bullous dermatitis reported by Howe which followed vaccination in adults, the mucous membranes of the mouth, pharynx and trachea being involved in connection with the skin.

In dermatitis herpetiformis the mucous membrane of the mouth, pharynx and larynx may be involved, and perhaps also that of the gastro-intestinal tract, showing that some types of pemphigus and dermatitis herpetiformis are closely allied conditions. A vegetating dermatitis as the result of pyogenic infection sometimes develops secondary to dermatitis herpetiformis, and in these cases it is not uncommon to find erosions and ulcerations about the mouth and lips.

In epidermolysis bullosa, bullae may form in the mouth and on the lips, and pseudo-milia mark the site of a previous eruption.

Herpes zoster exceptionally involves the mucous membrane of the mouth, but the side of the tongue, cheek, palate, tonsil and even pharynx and esophagus may be the seat of eruption when the disease invades that part of the ganglion which presides over the nutrition of the second division of the fifth nerve. Herpes simplex, which is not due to ganglionic involvement, is of frequent occurrence on the lips and oral mucosae.

In the erythema group of skin diseases and certain allied conditions, as urticaria, angio-neurotic edema, some forms of purpura and certain drug rashes, the mucous membranes of the mouth, nose, respiratory and gastro-intestinal tract may participate in the morbid process. Some of these affections are accompanied by visceral and constitutional manifestations and are of grave import. In erythema multiforme the bullous type is most frequently encountered on the mucous surfaces. All grades of the infectious process are met with, and the disease may be ushered in like the contagious exanthemata with a chill and high temperature, so that isolation may be necessary for a few days before a diagnosis can be established. The absorption of a local irritant, as from an insect bite, may give rise to urticarial lesions of the body and edema of the glottis. Serum injections have also been followed by severe edema of the face, pharynx and larynx.

Epistaxis and bleeding from the mouth and throat followed by erosions and ulcerations are met with in the severer forms of purpura. A case of generalized purpura was cited which originated from a bad stomatitis.

Among the drug rashes which affect the mucous membrane in conjunction with the skin are those from the ingestion of the iodides, bromides, mercury, belladonna, quinine, chloral, arsenic, the coal-tar products and the balsams. The reporter has seen generalized

eruptions and catarrhal conditions follow the administration of the iodides and balsams which closely simulated measles and scarlet fever.

Owing to the redness of the tongue and transitory white patches in dermatitis exfoliativa, it is probable that the mucosa is also involved.

Mention was made of eczema of the vermilion borders of the lips; of perleche, which affects the commissures with fissuring and a tendency to bleeding; of Fordyce's disease, which involves the vermilion border of the lips and the mucosa of the cheeks along the line of the closed teeth; and of psoriasis, which the reporter has seen on the mucous surface of the lips by extension from the skin; independent lesions he considers of doubtful occurrence. Seborrhoeic dermatitis of the scalp and face he has seen associated with lesions of the mucous membranes; as well as lichenization of the skin with leucokeratosis of the mouth, a relationship which he thinks may be significant in determining the pathogenesis of cases of leucokeratosis when tobacco and syphilis cannot be invoked as causative factors.

Lichen planus not infrequently begins on the genital organs simultaneously with lesions in the mouth, or the latter may precede or follow the cutaneous outbreak. Occasionally the mucous membrane alone is involved. The individual lesions on the mucosa soon coalesce and form plaques of various sizes and configuration, round, oval or stellate, or as a mosaic or arborescence. Their surface is rough and irregular to the touch, and they bear a close resemblance to leucokeratosis. The confusion with syphilis is sometimes heightened by the grouping and distribution of the eruption on the skin with pigmentary changes, swelling of the lymph nodes and occasionally the absence of pruritus. The therapeutic test is of no aid, as the disease is also favorably influenced by mercury. In making a diagnosis search should be made for pinhead-sized white-topped lesions which lie in the neighborhood of the plaques, or in a doubtful case a microscopical examination should be resorted to, as the histology is identical with the cutaneous lesion.

The role of the mucous membranes in such diseases as leprosy, glanders, actinomycosis, blastomycosis, gangosa and rhinoscleroma was touched upon.

Lupus erythematosus, Dr. Fordyce said, involves the mucous membranes, either by direct extension from the face to the lips, or it occurs in the mouth, pharynx or larynx independent of any cutaneous eruption. In his experience the lips were most frequently

affected and then the inner side of the cheeks. They are at first purplish-red and eroded, but later become dry and scaly and finally show an atrophic gray-white center surrounded by a hyperemic zone like typical lesions on the face. On the cheeks the early appearance is the same, but later they look like streaks produced by brushing the surface with silver nitrate.

Lupus vulgaris in the majority of cases begins primarily in the mucous membrane of the nose and by extension involves other regions. Seventy percent of all cases show mucous membrane involvement, and perforation of the septum is not uncommon. In advanced cases in the nose the disease produces a characteristic change from the destruction of the cartilaginous tissue, giving rise to the pointed nose, in contradistinction to syphilis, where the bony portion is attacked and leads to a flattened nose. On the mucosa, lupus is more often of the papillomatous type. Primary tuberculosis of the tongue is rare and is generally associated with an active tuberculosis of the lungs. It consists of an ulcer with sharp-cut irregular borders surrounded by miliary tubercles.

Pigmentation of the mucosa is seen in Addison's disease, diabetic melanoderma, vagabond's disease, acarus infection, in acanthosis nigricans and from the use of arsenic and silver nitrate.

Touching upon other conditions which also occur on the mucous membranes, mention was made of vitiligo, Darier's disease, xanthoma, von Recklinghausen's disease and the lesions produced by ringworm and favus.

Owing to the confusion which exists as to the relationship of leucokeratosis and an antecedent syphilis, Dr. Fordyce summarized his impressions as follows: Alterations of the surface epidermis accompanied by a certain amount of underlying inflammation may be produced from the irritation of tobacco smoke in subjects who have never had syphilis, depending on the susceptibility of the mucous surface; similar alterations take place in relapsing mucous patches, which changes are more frequent if irritated by tobacco smoke. Deep-seated inflammations, especially of the tongue, with impairment of the surface nutrition, give rise to analogous changes, and in susceptible subjects leucokeratosis might be produced by the rough edges of a tooth. The question of the relationship of lichen planus, lupus erythematosus, seborrhoeic dermatitis and toxic conditions which affect the blood vessels of the skin and mucous membranes was referred to in the early part of the paper. In a certain percentage of cases of leucokeratosis epithelioma develops. Growths

of the mucous membrane are usually of the prickle-cell type, while in the skin the basal cell or rodent-ulcer variety is of more frequent occurrence. The reporter has, however, had a number of cases of the basal cell type on the oral mucosa. Epithelioma of the lip and tongue in women is uncommon and usually secondary to some change in the surface epithelium from irritation or other cause. Dr. Fordyce quoted observations showing the influence of prolonged irritation in the production of cancer.

DISCUSSION.

Dr. Fox said he hoped that all had derived as much entertainment and instruction from these three excellent papers as he had done, and that he would like to refer briefly to one or two points that had occurred to him. Dr. Fordyce had spoken of the comparative anatomy of the skin and mucous membrane, and of the common idea of the alternation of cutaneous and mucous membrane affections, though he had not expressed his opinion as to the correctness of this idea. Dr. Fox, however, does not believe that this condition exists in a great majority of the cases where it is alleged. In a number of cases, patients suffering from psoriasis had told him—and perhaps the idea had been suggested to them—that when their psoriasis was better their asthma was worse. Having heard this a number of times, he finally made inquiries of several patients, and asked them to note carefully the days and weeks in which they suffered most from the asthma and from the psoriasis, and he had found no alternation of the two diseases. One of the patients admitted with some surprise that it was not at all as he had imagined it to be.

In regard to the occurrence of zoster on the oral mucous membrane, his experience has been the same as Dr. Fordyce's. He had never seen a case of zoster buccalis, although it might have occurred in some of his patients with frontal or cervical zoster whose oral cavity he had neglected to examine.

The last speaker had mentioned the frequency of lichen planus in the mouth. He himself had seen very few cases, and most of these had been observed within the past few months. The dermatologists have not looked for these lesions, and have therefore failed to see them.

In lupus vulgaris, especially of the nose, a disease with which the dermatologists are most often brought into contact, the eruption is very apt to attack both skin and mucous membrane. Erythematous lupus is an entirely different disease. It not only occurs on

the lips, but in some cases in the buccal cavity, and even in the pharynx. He reported such a case nearly twenty years ago of a patient in the Skin and Cancer Hospital. Kaposi had spoken of one or two such cases, and in these as well as his own, there was erysipelatous inflammation of the skin, and both these patients and his own had died of acute pulmonary disease.

Erythematous lupus occurs in two types—one the discoid form, the common type of erythematous lupus, which generally occurs only on the face, being rarely seen on the lips or mucous membrane; but the disseminate form, with patches on the scalp, hands, and other portions of the body, we are more apt to find on the surface of the lips, the buccal cavity, and the greater portion of the oral cavity.

The question of syphilis had been barred out of this discussion, and it would indeed be well to devote a whole evening to it. He would mention one point, however, as it was a practical one and should be borne in mind by all, because it is the cause of mistakes by the profession at large almost every day. That is the failure to recognize the fact that superficial ulceration of the tongue in a syphilitic patient is not necessarily syphilitic in its nature. It may have been syphilitic in its origin, but has long since ceased to be syphilis. The condition has often been kept up by the mercury or iodide of potash that has been given. The disease is considered obstinate, the remedies are pushed, and the ulceration grows worse. In these cases, if the the antisiphilitic treatment were stopped, the ulceration would improve; and if such remedies were adopted as would tend to lessen the congestion of the oral mucous membrane, the patient would be greatly benefited in the great majority of cases.

DR. DANZIGER said that the papers of the evening had certainly treated in a very exhaustive manner the eruptive conditions of the mucous membranes, but if one is suffering from one of these diseases, he will not only take the objective standpoint of the scientist but would be interested in a few remarks on the subjective symptoms. In his own case of lichen planus to which Dr. Cohn had referred, the mucous lesions were discovered only accidentally and had not caused him any discomfort. Six years ago, when he had his second attack, he was suffering also from pharyngitis and laryngitis, and was examined for that, and the condition of the membranes was discovered. Two months ago he suffered from another attack of lichen planus, and happened to feel a peculiar sensation of tightness of the mucous membrane, when yawning, and Dr. Cohn looked in and discovered the condition, and found not only

a white cord going down in the region of the maxillary joint but a **net-like eruption on both cheeks.** The condition has not caused him the slightest trouble, and he can eat and drink anything he wishes without feeling the slightest sensation.

If there is a leucoplakia and the subject smokes much, the lesions will crack and pain will be felt. Any herpetic eruption is accompanied by pain, and more or less glandular swelling, but there is no pain at all with lichen planus. If any of the members cared to look in his mouth, by searching closely they could differentiate the type of lesions, as seen on the skin. He has had herpetic conditions in his mouth on several occasions. The site of predilection for those attacks is the site of the white cords. Very likely the lichen planus made that the site of the eruption of a row of papules, and that gives the sensation of a stretching of the mucous membrane.

Dr. Danziger then told of an interesting case of angio-neurotic oedema that recently occurred in his private practice. The patient was a broker about forty years of age, who was fond of the material side of life and indulged freely whenever he could in food, champagne, etc. Early one morning the Doctor was called to see him, and found him choking; his temperature was normal, but his tongue was twice the usual size, and there was an infiltration of the sublingual tissue. There was no eruption, no kidney trouble, no heart disease, or other circulatory trouble, though there was a history of an attack of gout a few years previously. A brisk cathartic was administered, and ice was given in the mouth, and the oedema disappeared in three hours. In two days he had another attack. This time the lower lip was affected, and in the left cheek was a very tense swelling of the size of an orange, without the slightest congestion. This also subsided after three hours under the same treatment. A week later he was again called, and this time there was an infiltration of the upper lip extending to the alae of the nose, which disappeared in the same way as the previous conditions. Under strict antilithemic diet, the attacks have not recurred.

DR. POLITZER observed that Dr. Cohn said that he had seen only two or three cases of lichen planus of the mouth in a very extensive practice. Dr. Fox also had seen very few cases. That is probably because the lesions were not looked for. The condition produces no symptoms in the mouth, so the cases would not go to the laryngologists, and consequently they see very few. They are, however, not uncommon. Since discussing the matter with Dr. Cohn he had looked up the literature of the subject and found that lichen planus occurs in the mouth in a very large proportion of the cases. Thus

Wilson, who first described the disease, found buccal lesions in three cases out of fifty; Rona reports six cases out of eighteen; Koebner seven out of fifty-two; while Hexheimer found fifteen cases with mouth lesions out of twenty-eight.

He had been talking with the laryngologists about pemphigus, and was struck with the frequency with which they make that diagnosis. He got the impression that almost every vesicular or bullous eruption in the mouth was called pemphigus. Unfortunately that term does not describe a clinical entity, and is rather a clinical than a pathological term. Probably many diseases are included under this term, and it is a pity that the laryngologists should add further confusion to the subject by including under this name conditions which have no relation whatever with the cutaneous affection. Of course pemphigus occurs in the mouth and is often the beginning of the generalized systemic disease which goes by that name, but it is misleading to call a bullous eruption in the mouth pemphigus, when it is limited to the mouth. Pemphigus of the skin is a generalized disease, and no bullous disease ought to be called pemphigus unless there are generalized lesions. Dr. Cohn's suggestion, therefore, to call the bullous eruption limited to the mouth pemphigoid was one that merited general approval.

DR. CARTER said that urticaria of the larynx was a very important condition on account of the extreme symptoms, subjective and objective, that are present. He had seen two cases, one in a woman twenty-one years of age, who had a violent attack of urticaria following a lobster supper. She was covered with hives from head to foot, and a short time after the skin manifestations began the urticaria extended to the larynx. Tracheotomy was seriously considered, but the patient rapidly improved under hypodermics of apomorphia.

The second case was seen at Dr. Wright's clinic at the Manhattan Eye, Ear and Throat Hospital. A boy of nineteen years of age had an attack of urticaria fifteen minutes after eating some grapes. He was covered with hives and was suffering so much from dyspnoea that he was taken to the operating room, as it was feared that a tracheotomy would be necessary, but he also improved under treatment with apomorphia. It is not at all likely that a fatal result would occur from urticaria of the larynx, for before the blood of the patient became sufficiently venous to cause death, the increasing amount of carbonic acid in the blood would inhibit the nerve centres responsible for the angiotic oedema, and thus an automatic cure would result.

DR. HARMON SMITH wished to correct the impression that Dr. Politzer had given in regard to the frequency of the condition as reported by laryngologists. At the Manhattan Eye, Ear and Throat Hospital only two cases have been reported in the last six years, one from Dr. Chappell's clinic and one from Dr. Wright's clinic. The majority of these cases that have been seen and presented have been treated for syphilis first, for they were treated when the blebs had broken, which resembled a mucous patch at this stage. Subsequently someone saw the case when the eruption was evident, and at once recognized it as a pemphigus.

He would like very much to have the skin specialist give a differential diagnosis between lupus of the epiglottis and soft palate, and tuberculosis, syphilis, and cancer of the same locality. He had reported and presented to the Section one case as gumma of the larynx, in which diagnosis every other laryngologist present had concurred, and the patient was ready to be dismissed from the hospital as a cured case when it developed into a carcinoma. Carcinoma may have been superimposed upon the syphilis, but these mixed cases are very difficult to diagnose. If the skin specialists could present any information on the subject it would be of great benefit to the laryngologist.

DR. FORDYCE expressed his appreciation of the reception his paper had met, and said that he had been much instructed by the papers which had followed his and by the general discussion which had been elicited. He agreed with the remarks of Dr. Politzer regarding the frequency with which lichen planus was met with in the oral cavity and said that it was only within the last few years that dermatologists in this country had systematically looked for its presence. He had seen at least fifteen to twenty cases in the past two years in his hospital and private practice. It was not present, however, in all cases of lichen planus.

Replying to Dr. Harmon Smith's remarks, in regard to the differential diagnosis of lupus and syphilis of the soft palate and uvula, Dr. Fordyce said that syphilis was much more common in this region than lupus and that the latter was an affection of much slower development. In cases of doubt the therapeutic test would generally clear it up.

DR. FREUDENTHAL said that several cases had been presented before the Section as lupus in which he had doubted the diagnosis, and several times he had called them tuberculous cases. Two or three of these cases developed tuberculosis immediately afterward.

CHICAGO LARYNGOLOGICAL AND OTOLOGICAL SOCIETY.

Regular Meeting, December 8, 1908.

A. H. ANDREWS, M. D., PRESIDENT.

PRESENTATION OF PAPERS.

Demonstration of a Foreign Body in the Esophagus Removed by Esophagoscopy. By HERMAN STOLTE, M. D.

Dr. Stolte reported the case of a woman who, while eating soup, had accidentally swallowed a piece of bone. By using Jackson's esophagoscope the body was located behind the larynx and was removed with Killian's slender forceps twenty-four hours after its introduction. The bone was wedge-shaped and measured one and one-half inches in length and one-half inch in width. The foreign body had caused great edema of the esophagus and swelling of the neck, and the patient's temperature had risen to 103 degrees. After removal of the foreign body the symptoms rapidly subsided.

DISCUSSION.

DR. J. HOLINGER: In connection with Dr. Stolte's last remarks as to the use of the esophagoscope in possible cases of cancer, I may mention that the laryngologists are not the only ones who fail to make esophageal examinations. Allow me to mention the history of the wife of a colleague who complained of sore throat, etc. She was examined by several laryngologists and especially neurologists who seemed to think that her trouble in swallowing and her cough were hysterical in nature. They sent her south, where she remained for several months, coming home finally at the insistence of her nurse. She had lost considerable in weight, and was unable to swallow anything. Now for the first time an esophagus bougie was passed, and it was found that there was complete occlusion of the esophagus. That was six months after the first complaints. The tumor had perforated into the larynx and covered the glottis. On both sides of the larynx were swollen glands. There was no longer any question about the diagnosis. Tracheotomy and stomach-mouth had to be made. If the diagnosis had been made five or six months earlier a radical operation might have been performed, with good chances for the patient.

DR. F. GURNEY STUBBS: Owing to the extremely high mortality which follows the external operation for foreign bodies in the esophagus, there is no doubt that Dr. Stolte's operation was a life-saving procedure.

But it is not only in cases of foreign bodies in the esophagus that the esophagoscope is serviceable, but in strictures and for diagnosis as well. Without referring further to strictures I would relate two cases to demonstrate its value in diagnosis.

Some time in April of this year I was asked to see Miss M., aged 53. Previous to the preceding three months she had always been well and strong. At that time she began to notice some difficulty in swallowing food. This gradually increased till only fluids could be taken. Due to lack of sufficient nourishment, she was losing weight, but had no pain, nor could any enlargement or hardness be found on a careful external examination. The laryngoscope showed nothing in pharynx, larynx or trachea; but under a general anesthetic I passed the esophagoscope, and found just below the mouth of the esophagus, and about on a level with the cricoid, an annular constriction, reddened, and surmounted along its edge with a well marked papillomatous growth.

The diagnosis was absolutely positive. The surgeons in charge of the case decided it was best not to operate. In two months a gastrostomy was done, and she lived till October. It was only just before her death that the adjacent lymphatics became involved, hence it is clear that the esophagoscope was the only means that could have given a positive diagnosis so early in the case.

The second case was in a man about fifty, in whom a diagnosis of carcinoma of the stomach had been tentatively made. The patient was emaciated, losing weight rapidly, and had been regurgitating food for six to eight weeks. There was no tumor to be palpated, nor did the patient suffer any pain. I was asked to pass the esophagoscope for diagnostic purposes.

Under cocaine I passed one tube, but it proved too short to reach the cardia, and so far as it went showed nothing wrong. Under general anesthesia a longer tube was passed and showed the walls normal into the cardia. There was no constriction or obstruction, which had been there previously, and had refused to allow a bougie to pass into the stomach. Hence in this case the negative findings were of as much value as positive would have been and enabled us to decide on cardio-spasm. The subsequent treatment of the case bore this out.

DR. HERMAN STOLTE (closing): When I introduced the instrument I saw a long wound in the esophagus, discolored and gangrenous, probably caused by pushing down the foreign body. The material covering the bone had a decidedly gangrenous odor.

When one is introducing the esophagoscope, the patient should be placed in the lateral position, although the sitting position will answer, if the patient is seated on a low stool, so that the head can be thrown far back. Occasionally it may be necessary to extract a tooth in order to facilitate the introduction of the instrument, and at times its introduction may be impossible, as, for instance, in cases of lordosis.

A Case of Suppurative Middle Ear Disease with Involvement of the Labyrinth Limited to the Right Cochlear Portion and to the Left Vestibular Portion. By G. W. BOOT, M. D.

(To be published in full in a subsequent issue of THE LARYNGOSCOPE.)

The case was that of an unmarried female forty years of age who had an acute bilateral otitis media for which both mastoids were operated on at different times during the year following the acute attack. At the time the patient came under Dr. Boot's observation she was very deaf in the left ear, so that conversation required the use of a speaking tube, and even then was difficult. The right ear was apparently totally deaf. In spite of the loss of cochlear function in the right ear, syringing that ear with cold water caused a most intense dizziness at once, and a pronounced nystagmus. Syringing the left ear caused no response whatever. Tuning fork tests of the right ear were absolutely negative. Tuning fork tests of the left ear showed loss of the scale below 100 vibrations, and above G^2 , but with an island of hearing from 15 to 11 of the Edelmann-Galton whistle. Bone conduction was markedly prolonged, Rinne negative, and Weber lateralized in the left ear; these symptoms indicating that either there was a marked fixation of the foot plate of the stapes or a marked interference to the entrance of sound waves from the formation of scar tissue in the oval window.

The essayist called attention to the two fenestrae as possible points of entry of the infection from the middle ear, and to the limitation of infection in one case to the cochlea, and in the other to the vestibule and semicircular canal system. He also pointed out the danger of suppuration of the labyrinth occurring if the stapes were dislocated during a radical mastoid operation, and the great danger of loss of hearing if the only ear that functionated were subjected to a radical operation.

DISCUSSION.

DR. GEO. E. SHAMBAUGH.—Until quite recently our view in regard to pus infection of the labyrinth has been that such an infection is a diffuse one, which destroys the entire function of the labyrinth. With the improved methods for testing the various parts of the labyrinth we have been able to determine that pus infection may be a circumscribed one, and not involving the entire labyrinth. The point has been mentioned in the paper just read, and has been previously suggested by others, that a suppurative involvement in the vestibular part of the labyrinth finds difficulty in passing through the *canalis reuniens*, and thus it frequently happens that the cochlea escapes infection. It may be true that the pus infection in the vestibule becomes walled off, so that the cochlea escapes, but I hardly believe this is due to the difficulty of the infection passing through the narrow *canalis reuniens* of Hensen, which connects the sacculus with the *ductus cochlearis*. A pus infection which extends from the tympanum into the vestibule infects first of all the perilymphatic spaces. The communication between the perilymphatic chamber of the vestibule and the cochlea by means of the *apertura vestibularis cochleae* is a very free one, and there is no necessity at all of imagining that the infection must first get into the membranes and then extend through the *canalis reuniens* to the *ductus cochlearis*. When the function of the cochlea is destroyed by pus infection that breaks first into the vestibule, this destruction comes about, I believe, by the infection passing from the vestibule through the *apertura vestibularis cochleae* into the *scala vestibuli*, and then into the membranous labyrinth through the delicate membrane of Reissner. If our clinical observations are correct that pus infection of the vestibule is frequently limited to this part of the labyrinth, this could be readily accounted for by a plastic condition walling off the *apertura vestibularis cochleae*. As to the advisability of urging patients to have a radical operation done on an ear which the patient must depend upon for hearing, I do not believe there can be much ground for difference of opinion. Under these circumstances the patient should be urged not to have a radical mastoid unless there are pretty definite indications pointing toward the development of a serious complication. In such a case the occurrence of a cholesteatoma hardly justifies a radical mastoid. This is a point we must never lose sight of, that to operate upon an ear that the patient depends upon for hearing we take the risk of impairing the function to a more or less degree.

DR. NORVAL H. PIERCE.—The main practical point in the paper is that it brings out the fact that the ordinary suppuration in the labyrinth tends to become encapsulated. It is important for us to remember that point, especially as operations on the labyrinth are very likely to become more frequent on account of the increased discussion on this subject, especially in American literature. This is true particularly of the suppurative inflammation, but hardly of those changes due to cholesteatoma, because it tends to invade progressively the various cavities of the labyrinth. This walling off of the inflammation by a protective wall is the only thing we can produce by operation, and the operation is very likely to break down this wall that has been provided by nature. The mortality following operations on the labyrinth is about forty-five percent, and it is quite likely that this rate will be raised the more we operate on the labyrinth. Before we attempt an operation for suppurative labyrinthine disease, we should consider that nature will probably do more than we can do by operative procedures.

Preliminary Notes on Bone Conduction. By A. H. ANDREWS, M.D.

Dr. Andrews discussed the subject of bone conduction in normal ears, and called attention to a number of different conditions which influence the relation between air and bone conduction. He finds that when the handle of the fork is allowed to touch the auricle in the bone conduction test, hearing increases an average of twenty-five percent. When the fork is placed upon the mastoid immediately after being struck, it ceases to vibrate sooner than if allowed to vibrate awhile in the air. When the fork is held tightly in the fingers, it does not vibrate as long for either air or bone conduction as when held lightly, and when hung on a string passed between the prongs it can be heard more than twice as long as when held in the hand.

The tests reported were the result of an examination of ten individuals with normal ears and were made with a C² fork.

DISCUSSION.

DR. J. HOLINGER.—I think that the greater part of these experiments find their explanation in the mechanism of the vibration of the tuning-fork. (Here Dr. Holinger gave a blackboard demonstration in explanation of his remarks.) Dr. Andrews will find an elaborate discussion, with a great many more interesting facts and experiments, in a paper of Professor Edelmann, published in the

Zeitschrift f. Ohrenheilkunde. The facts are not new nor of recent discovery, as they are mostly mentioned in the first communications of Professor Bezold on Rinne's test, twenty-three or twenty-five years ago. For example, the whole technique of holding the tuning-fork in Rinne's test is given and the reason for so doing. I must say, however, that I do not know what has appeared in English on the subject.

DR. F. GURNEY STUBBS.—In one of the experiments noted by Dr Andrews he found the patient perceived the tone again on replacing the fork to the mastoid. This is what Hammerschlag calls a fatigue symptom. The fork is placed on the mastoid while in vibration, removed for two or three seconds as soon as the patient has indicated that the tone has ceased, again replaced, and it is again perceived. This may be repeated two or more times. This fatigue symptom both he and Gradenigo declare to be a sign of hysteria. I can not agree with this. The fact is often noted by otologists in not only non-hysterical patients but in those whose hearing is normal. While it is evidently a fatigue of the auditory nerve, I think it is most often seen in those patients who cannot easily concentrate their attention, or in those whose acuteness for tone perception is not marked. I do not regard it as a symptom of much value.

DR. G. W. BOOT.—Two points in this connection are worthy of note. One is in reference to comparing the duration of bone conduction from the vertex of the patient with the duration in a normal individual. It takes very little pressure to cause the duration to be considerably prolonged. For this reason I am accustomed to teach my students to allow the fork to rest on the head by its own weight, alone, using the fingers only to prevent it from falling over. The other point is that the C² and C³ forks of the ordinary Hartmann set are so full of overtones as to be practically useless for the purpose of determining a patient's perception of pitch.

DR. A. H. ANDREWS (closing the discussion).—I have often noted the phenomenon mentioned by Dr. Stubbs in persons who were apparently healthy, but always when I used forks which ring a long time. I have forks with which I am never able to get a tone of longer than ten or fifteen seconds. Other forks, when held with the fingers, will ring for a minute, and a few will ring two minutes. When using the long-time forks, patients seem to tire of the sound, and lose the tone, only to hear it again when the fork is replaced.

There is a voluntary and an involuntary effort at hearing, just as there is a voluntary and involuntary effort at seeing. There evidently is something in the ear which corresponds very closely to the accommodation in the eye.

With regard to the statement that most of the C² and C³ forks in the Hartmann set were valueless because of overtones, that is true in part, but not of all the forks.

With regard to the philosophy of the overtone, that I think is so well understood that I need not mention it. I merely wished to speak of the practical application of these forks.

DR. STANTON A. FRIEDBERG reported the case of a man twenty-seven years of age from whose nose he removed a rhinolith $1\frac{3}{8}$ inches long and nearly a half-inch wide, weighing ninety grains. The patient's nose was broken sixteen years ago. Shortly afterwards he discovered a movable foreign body in the nose which could occasionally be felt with the finger. A chemical examination of the rhinolith had not been made.

DISCUSSION.

DR. W. L. BALLENGER.—Several years ago Dr. Wilder referred a patient to me from whose nose emanated a very foul odor. I removed a calculus whose nucleus proved to be a piece of iron which was the breech-pin of a musket. While firing a gun thirty years before, the weapon exploded, destroying the left eye.

DR. FRIEDBERG (closing).—From the history of trauma, there was a possibility that the mass in the nose might have been a sequestrum; but if that had been true, the patient would not have been able to move the mass as he did. For fifteen years he could grasp the anterior end of the stone, moving it backwards and forwards, but never succeeding in withdrawing it. The skiagraph showed the outline of the stone very well.

DR. J. C. BECK.—Recently there appeared in a German journal an article on the diagnosis of rhinoliths by means of skiagraphy, before and after their removal. The lime stones apparently originated in a local necrosis and appeared to be multilocular. I have had two or three cases of large rhinoliths which, when examined chemically, proved to be of the magnesium type.

PRESENTATION OF SPECIMENS.

DR. G. E. SHAMBAUGH demonstrated an anatomical preparation showing a congenital absence of the lateral sinus. Of the anatom-

ical variations that occur in the venous channels in the region of the temporal bone, the congenital absence of the lateral sinus is one of the most interesting. This is by no means a common occurrence, and, although occasionally a preparation of this sort is discovered, there appears to be no way of determining beforehand the existence of such an anomaly. The presence of this condition on one side necessitates, of course, a large part of the drainage from the head through the sinus on the opposite side. An operation upon the lateral sinus, ligation of the jugular in cases where there is a congenital absence on the opposite side, would be a very serious accident.

DISCUSSION.

DR. HERMAN STOLTE.—I saw a specimen once in which the lateral sinus was situated so high up that it almost reached the crista superiora of the petrous bone. The man always had tremendous roaring in his ears, which eventually led him to commit suicide.

DR. W. I. BALLENGER.—I have a specimen showing the same condition as that mentioned by Dr. Stolte, but I do not know whether the individual had any roaring in his ears.

DR. A. H. ANDREWS.—I would like to ask Dr. Shambaugh whether he made an examination of the distribution of the veins at the torcular, and, if so, how they were distributed?

DR. NORVAL H. PIERCE.—The accident has occurred that the jugular was ligated on one side, causing the death of the patient, and at the post-mortem no jugular was found on the other side.

DR. GEORGE E. SHAMBAUGH (closing).—I had only the two temporal bones, without the connecting parts; therefore I cannot answer Dr. Andrews' question.

The Treatment of Acute Suppuration of the Middle Ear by the Bier Method. HEINE. *Berliner Klin. Wochenschr.*, July, 1905.

The author tried the Bier treatment in twenty-three cases, but is unable to state whether they were cured in less time than by ordinary methods.

YANKAUER.

TORONTO ACADEMY OF MEDICINE.

SECTION OF OPHTHALMOLOGY AND OTO-LARYNGOLOGY.

Meeting of November 19, 1908.

D. J. GIBB WISHART, M. D., Chairman.

ABSTRACT OF PROCEEDINGS.—CASES IN PRACTICE.

DR. GEOFFREY BOYD reported a case of hyperplasia of the nose, in which the bridge, the turbinates, and the septum were affected. Diagnosis being doubtful, antisyphilitic treatment was tried. For a while it was attended with marked success, the hyperplasia being materially reduced. After some months the case returned for treatment, with more definite symptoms of lupus. Surgical treatment was now resorted to by curettage, etc., resulting in cure. During the last year there has been no return.

Question: Was this a case of syphilis, tuberculosis or lupus?

DR. PRICE-BROWN was inclined to think that it was a case of development of lupus in a syphilitic patient, in which the specific symptoms occurred first; the lupus being controlled subsequently by the operative treatment.

Hyperpyrexia and Death after Tonsillotomy. By D. J. GIBB WISHART, M. D.

This was the case of a girl, aged 18 years, presenting no symptoms out of the ordinary, excepting the presence of enlarged faucial tonsils and adenoids. The tonsils were coated with secretion, the crypts being charged with the ordinary cheesy deposit, so frequently found in these cases.

Double tonsillotomy and adenectomy were done under a general anesthetic. The hemorrhage was not very great. An hour or two later febrile symptoms set in, rising, almost hour by hour, to 101, 102, 103, 104, 105, 106, 107 degrees. With the development of high temperature, there was advancing cyanosis and coldness of extremities. The patient died twelve hours after the operation.

Dr. Perry Goldsmith congratulated Dr. Wishart on his readiness to report such an unfortunate result. Medical men are prone to report their brilliant results, and not their poor ones, forgetting that they learn more from the unfortunate experiences of themselves and

their confreres than they do from the most brilliantly devised operation. He would suggest that this case might have become rapidly and fatally ill, even without operation.

Dr. Geoffrey Boyd regarded Dr. Goldsmith's explanation as probably the right one. Had the operation been deferred, a follicular tonsillitis might have developed—in fact, there was an incipient inflammation. The shock of operation aided absorption, the consequent toxemia and the unfortunate result.

Dr. Price-Brown looked upon this case as unique. He did not know of a similar case recorded in our text books, or in the reports of clinical histories. While the operation was in every way justifiable, he regarded the case as one of acute septic infection, due to absorption of toxins, through the severed crypts, by the large blood vessels and lymphatics, situated at the base of the tonsil. It is a case that should be given a wide record.

Case, with a history of large external opening in region of frontal sinus, accompanied by excessive foul crusting, within the nasal cavities, and deviated septum, by Dr. Perry Goldsmith. The patient, a woman aged 30, having a history of syphilis, had been placed under specific treatment with the result of complete healing of external wound. Lavage had reduced the nasal discharge. There was still an atrophic condition, with free discharge of pus through the nose from the affected sinuses.

Dr. J. P. Morton believed, contrary to the general opinion, that atrophic rhinitis, in a very wide nostril, was often the result of septal deviation; and both these conditions being present, it might apply to this case. In the present patient, syphilis had been added to the above conditions and sinusitis had followed as a result. He would advise a continuation of the antisyphilitic treatment for a time, before interfering with the sinuses, except by free local cleansing of the parts.

Dr. C. M. Stewart thought that this was a case of syphilis in a woman, who previously had a deflected septum. The sinusitis was most likely due to the filthy condition of the nose. Would advise that the specific and cleansing treatment be continued.

Laryngeal case, presented by Dr. Perry Goldsmith for diagnosis. In this patient the left lung was affected with tuberculosis; the larynx seemed to be free from disease, with the exception of paralysis of the left cord. To what was this paralysis due?

Dr. Geoffrey Boyd said that the case was specially interesting on account of the ease with which it could be examined and the nature of the case. He thought that the left vocal cord was quite fixed, and that the right swept well beyond the median line, with such force as to impart a perceptible movement to the left arytenoid. He would suggest the use of the X-ray to clear up the matter of etiology. The condition was probably due to pressure from a mediastinal gland enlarged through the original lung infection.

Case of severely deflected nasal septum, after operation and complete recovery, by Dr. J. Price-Brown. This man, aged 30, mouth-breather from childhood, had extreme curvature of septum to right, with attachment to lower turbinate; also compensatory hypertrophy of left middle and inferior turbinates. After removing a segment of latter, to allow for replacement of septum in the centre, an H operation was done from the convex side—the parallel cuts being made horizontally. In this operation all the cuts are made obliquely through both mucous membrane and cartilage. The segments, gliding over each other, were pressed beyond the median line toward the concave side, and held in position by a single soft rubber splint slid into the convex side.

The splint was not removed for a month, the passages being cleansed daily by pledgets of absorbent cotton. At a later date, the anterior end of the left middle turbinate, cystic in form, was taken away (specimen exhibited.)

Result, as shown in patient, true cartilaginous septum in the median line, covered on each side by normal mucous membrane, with perfectly free respiration through either nasal passage. Case shown as a protest against indiscriminate submucous resection.

Dr. Gibb Wishart had never tried the H operation; but in this interesting case the result seemed to be very good. Both nasal passages were free, but the anterior part of the left passage perhaps not quite so free as the right. If the case had been his, he would have performed operation by submucous resection. He would ask the doctor how he came to remove the middle turbinate?

Dr. C. M. Stewart thought that the reason that the doctor removed a portion of the middle turbinate was because of its cystic condition. Concerning the H operation, he had never tried it; but he did not fall in with any operation that would forcibly straighten the deflected septum. His experience with such operations was, that they might be successful at the time; but in the course of a

year or more, the septal condition was as bad if not worse than at first. He was a strong advocate of Killian's submucous resection operation, and had never seen any bad results follow it in adults.

Meeting of December 17, 1908.

D. J. GIBB WISHART, M. D., Chairman.

ABSTRACT OF PROCEEDINGS.

The Treatment of Chronic Suppuration in the Maxillary Antrum.

Discussion opened by G. R. McDONAGH, M. D.

In leading the discussion Dr. McDonagh advocated conservative measures, condemning too frequent radical operations. He considered that opening the antrum through the alveolus was out of the question, and should never be resorted to. Operation through the canine fossa was also condemned.

In ordinary cases which could not be treated successfully by lavage through the ostium maxillare, he always operated through the middle or inferior meatus, the latter preferred, the anterior end of the inferior turbinal having been first removed. All necessary lavage could then be readily carried out. In extreme cases where other methods of treatment proved unavailing, the radical, Caldwell-Luc operation must be done.

Dr. Gilbert Royce thought the points made by the leader in the discussion were well taken; and was glad to know that he advocated conservative measures. He cited a case in which, after a severe head cold, a medical man complained of a bad odor which emanated from the nose. Examination revealed some flocculi of pus on the middle turbinate; and a swab of cotton passed under the turbinate emitted a bad odor. The case promptly recovered on irrigation.

He also agreed with Dr. McDonagh in condemning the alveolar route. He did not like the removal of the entire outer wall of the nose, as advocated by some, owing to the irritation the impact of cold air produces upon the antral mucous membrane. He liked Ingals' chisel, designed for opening the inferior meatus; and he used as a mallet a piece of lead folded in a towel. In this manner the operation can be done very quickly.

Dr. Price-Brown was glad to hear conservative measures advocated in the treatment of these cases. His personal experience led him to reserve operation by the alveolar method in antral disease to

cases of dental origin. In such cases, after removal of the affected tooth, lavage usually resulted in cure.

In cases where there was reason to believe that the antrum contained polypi or polypoid tissue, he first relieved the middle turbinal region, when necessary, by intranasal operation; and then made a free opening through the canine fossa, following this by whatever curetting was necessary. After packing the cavity for two days with iodoform gauze, the subsequent treatment was by irrigation, the result as a rule, being cure.

In cases of suppuration in the antrum, without the presence of polypi, he preferred to operate through the inferior meatus, after removal of the anterior and of the inferior turbinate, the subsequent treatment being lavage.

During a special practice of many years, he had never found it necessary to do a complete radical, or Caldwell-Luc, operation. In a record of a large number of cases the treatment on the whole had been attended by very good results, each case being dealt with individually on its merits.

Dr. Geoffrey Boyd agreed altogether with the rational and conservative treatment advocated by Dr. McDonagh. He had cured several chronic cases by means of injections of iodoform emulsion after lavage. This had a marked effect in diminishing fetor. The way of choice seemed to be the inferior meatus, after removal of the anterior third of the lower turbinate. The difficulty, even after a fair opening, was that in time the wound closed completely. He preferred the removal of the anterior instead of the middle third, so that the patient could personally wash out the cavity. He condemned the alveolar method of drainage altogether, even though the teeth were at fault. In his opinion the opening through the canine fossa alone, had all the disadvantages and few of the advantages of the radical or Caldwell-Luc operation.

Meeting of January 21, 1909.

D. J. GIBB WISHART, M. D., Chairman.

ABSTRACT OF PROCEEDINGS.

1. Dr. Gibb Wishart exhibited a case of pre-laryngeal swelling for diagnosis and suggestions for treatment. The patient, a young woman, had been troubled for a long time with a growth lying external to the upper thyroid and subhyoid region. It was near an

inch in diameter each way, and perhaps three-eighths of an inch in thickness, lying slightly toward the left side. It was subcutaneous and attended by neither pain nor discoloration.

Dr. Price-Brown did not think it was cystic, nor a mal-developed thyroid. As it seemed to be solid, he favored dissecting it out. He cited a similar sized tumor of the neck of a phantom character which he would show at a later date.

Dr. Stewart thought it might be of an embryonic character, due to the non-closure of the thyrolingual duct; and would recommend thorough dissection out, removing every particle of mucous membrane it might contain, or there would be a recurrence.

Dr. Morton referred to a similar case that he had seen, agreeing with Dr. Stewart in his conclusions, and method of treatment advocated.

2. Dr. Wishart next exhibited a case of prolapse of the right laryngeal ventricle. The patient, a student, brought it on suddenly, six weeks ago, by shouting at a football game. There was redness and swelling above and internal to the right vocal cord, attended by hoarseness, as the cords could not be perfectly adjusted in vocalization to other signs present. How should the case be treated, as there was no improvement in voice production? Should it be by intra-laryngeal operation? If so, what? or by thyrotomy?

Dr. Price-Brown suggested intra-laryngeal incisions under cocaine. If these failed, cocainizing the larynx thoroughly, and then reducing it, little by little, with the electro-cautery needle. Did not think thyrotomy would be advisable.

3. Dr. Wishart also showed a case of deafness from gun explosion close to the ear.

4. And one of Heath's operation on child a year old. Result, excellent, having but still slight weeping from the wound. As card specimens he exhibited portions of bone and cartilage after sub-mucous resection.

PRESENTATION OF PAPERS.

Etiology of Nasal Polypi. By J. PRICE-BROWN, M. D.

ABSTRACT.

The writer reviewed the many theories that have been advanced upon this subject by different authors, dwelling particularly upon Woakes' theory of ethmoid disease as the cause; Grunwald's, that sinus disease was the etiological factor in all cases of true nasal polypi; and Yonge's, that they were due to degeneration of the

glands in the sub-epithelial tissues of the middle turbinal region. The latter was the one favored by the writer. He also drew attention to two varieties of hypertrophy of the middle turbinal. The one being compensatory to deviation of the septum into the opposite nasal passage; the other being compensatory to atrophy of the inferior turbinal on the same side. While in the former class he had frequently seen fully developed nasal polypi, in the latter he had never seen any. When, added to this, we find that nasal polypi developed, as a rule, in the wider nasal passage first, and in the narrower one afterwards, it was reasonable to believe that deviation of the septum had some influence in the primary etiology of some of these cases.

Dr. Wishart said that in his cases of deviated septa, polypi had never been conspicuously associated, certainly not in exaggerated cases. The theory advanced did not explain single polypi, nor those situated elsewhere than in the middle meatus. Lately he saw a solitary polypus in the superior meatus unassociated with any other lesion.

Except in a few cases in which the whole middle turbinal tissue was diseased, he had never had to remove bone as a part of preventive treatment.

Dr. Trow said in recurring polypoid growths in the nose, there is generally, if not always, either suppurating sinusitis or ethmoiditis. Contrary to the experience of the reader of the paper, he had seen several cases of polypoid growths in the upper part of the nose, where there was an atrophic condition of the inferior turbinates.

Dr. Campbell saw no clashing of theories in the views advanced by different writers. All usually meant the same thing, namely: Chronic inflammation of the submucous tissues, in varying degrees of severity.

The Toilet of the Tympanum, and its Relation to the Success of the Radical Mastoid Operation. By GILBERT ROYCE, M. D.

ABSTRACT.

Although the first consideration, in the radical mastoid operation, is the cure of the discharge, the preservation of the hearing should not be lost sight of. The writer contends that improper treatment of the tympanic cavity accounts for many failures; and he gives in detail the technique and precautions necessary in dealing with it. Special stress is laid on the importance of thorough

work done about the mouth of the Eustachian tube, so as to induce rapid dermatization from the anterior canal wall. The stapes should be carefully preserved in position, and no curetting should be done about the window; otherwise, impaired function might result. The cavity should be rendered as smooth and even as possible, so as to be accessible to after treatment. Firm packing with strips of plain gauze is the only reliable prophylactic measure against excessive granulation. The hearing should not suffer much more than in an ordinary ossiculectomy.

Dr. Gibb Wishart congratulated Dr. Royce on his familiarity with the tympanum. He said he had always paid particular attention to the region about the tube, and thought the after treatment was quite as important as the operative part. He had found that the stapes was often difficult to see.

A Case of Severe Intoxication During Cocainization of the Trachea in a Patient Having an Intra-Tracheal Goitre. M. G. FREY.

Ann. des mal. de l'oreille, March, 1907.

The patient was a girl of fifteen on whom a tracheoscopy was being performed in the clinic of Professor Siebenmann.

On examination a small tumor could be seen below the cricoid, and several applications of cocaine were made for the purpose of excising a piece for histologic examination. A 10 per cent solution of cocaine was used, and one application of a one per cent solution of adrenalin. Shortly afterwards there was a marked pallor with acceleration of the heart's action. After a little rest, an effort was made to introduce the tube. Immediately there was opisthotonus, convulsive movements of the face, strong clonic movements, then contractions of the extremities, cyanosis, superficial respiration, and absence of corneal reflex. The pupils were lightly dilated and reacted to light.

These convulsions lasted ten seconds, followed by loss of consciousness for ten minutes. On recovery of consciousness, there was a feeling of fatigue. No further effort at intervention was made and the goitre was treated with iodine for three months, at the end of which time the small intra-tracheal tumor had disappeared.

The author states that the symptoms greatly resembled an epileptic attack, although it was evidently due to the cocaine. The amount absorbed, however, could not have been five centigrammes, an amount generally used without ill effect, indicating in this case a special idiosyncrasy.

Barth had a similar result after having applied to the nasopharynx six drops of a twenty per cent solution in order to remove adenoid vegetations. These convulsions lasted one hour and a half, reappearing six hours later and the following day.

In some cases, 10 of 176 cases reported by Falk, the use of cocaine has resulted in death, two of the cases being in internal applications. In the first, there was absorption of one gramme of a two per cent solution; in the second, one gramme of a five per cent solution. In the first case, death followed in an hour, and in the second, in a quarter of an hour. Of the other cases reported, one was an injection into the urethra, one into the rectum, two into the mucous membrane of the mouth, one of the conjunctiva. The remainder were due to the instillation of cocaine into the middle ear, the amount being less than 0.15 centigramme.

The author concludes that there is no rule in the application of cocaine. Much larger doses than those used in the fatal cases have been used with no ill effect. It appears that all the mucous membranes do not absorb cocaine equally, and those of the upper respiratory passages appear much slower in their absorbing capacity. The spray is dangerous because it reaches a larger part of the mucous membrane.

SCHEPPEGRELL.

Hay-Fever. HEYMANN. *Berliner Klinische Wochenschrift*, No. 13.

The author reports favorable results from the use of thyroiodin combined with appropriate local treatment, during the intervals.

YANKAUER.

